

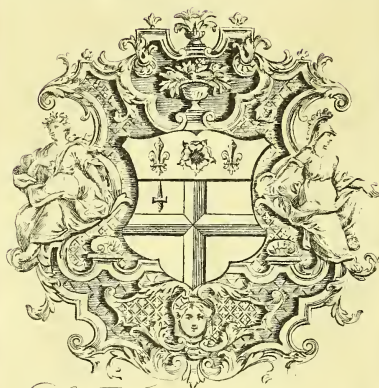
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TWENTY PLATES,

WITH EXPLANATORY REFERENCES, ILLUSTRATIVE OF

AN

INTRODUCTION

TO

COMPARATIVE ANATOMY,

BY

C. G. CARUS, *Med. et Phil. Doct. &c. &c.*

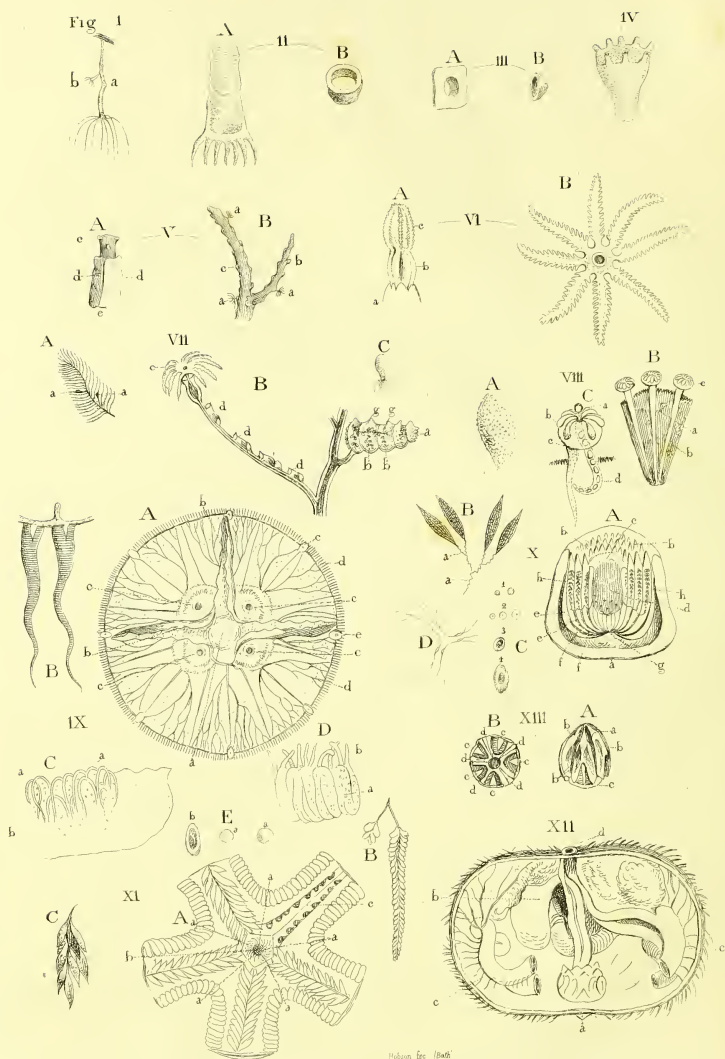


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EXPLANATION OF THE PLATES.

PLATE I. ZOOPHYTES.

Fig. I. (From TREMBLEY, *Mémoire pour servir à l'Hist. du Polype.*) A green Polype (*Hydra viridis*), with two young ones: a. appears merely as a little bud; b. is of a larger size.

Fig. II. (From the same.) The body of a green Polype magnified: A. is a longitudinal, B. a transverse, section.

Fig. III. (From the same.) A. the opening by which the cavity of the body of the mother animal communicates with B. the bud-like young one (magnified).

Fig. IV. (From the same.) The mouth-piece of a green Polype, in order to shew the tubular structure of the arms (magnified.)

Fig. V. (From CAVOLINI, *Zoophytes of the Mediterranean.*) *Gorgonia verrucosa*: A. a little twig, in which the sensitive flesh has been removed from the stem; B. an entire branch with some animal blossoms.

Fig. VI. (From the same.) A. an individual blossom of that kind folded together: a. tubercle from which it arises; b. the body; c. the arms closed together. B. the same unfolded, and seen from above.

Fig. VII. (From the same.) A. a little branch of the *Sertularia pluma*, with some Ovaries, a. a. B. a small portion of it magnified; a. Ovary; b. Ova fixed upon a cord (g. g.) within it; d. d. d. animal blossoms retracted; c. a similar one unfolded. C. an Ovum, with a fluid escaping from its pedicle.

Fig. VIII. (From SPIX, *Annales du Muséum.*) A. a small piece of *Alcyo-*

nium *eros*. B. a section of it magnified, with the Polypes in its cells; a. red granular substance which surrounds the Polypes; b. conical-shaped tubes united towards the basis; c. Polypes. C. a magnified Polype, without the muscular membrane that attaches it to the cells; a. the mouth; b. eight Tentacula; c. the Stomach with the Ovary below it, the little globes of which contain several Ova.

Fig. IX. (From GAEDE, *Anatomie der Medusen*.) A. the Medusa *aurita*, seen from below; a. mouth; b. the arms, (the lower one cut away;) c. respiratory sacs, with their external openings and the ring of folds (probably the Ovary) shining through; d. circular vessel (into which the radiating vessels empty themselves) and Tentacula at the margin of the body; e. eight round bodies on the edge of the body. B. two Tentacula magnified. C. the point of one of the arms magnified; a. little vesicles filled with Ova; b. the Ova which escape from them into the water. D. a part of the circle of plicæ found in the stomach: a. folds filled with granules; b. cæcum-like vessels. E. Ova; a. a. not yet perfectly formed; b. with the embryo visible.

Fig. X. (From SPIX, *Annales du Muséum*.) A. section of the Actinia *coriacea*; a. basis; b. triple row of respiratory Tentacula; c. Mouth; d. cavity of the Stomach; e. e. longitudinal muscles; f. f. excavations between them; g. point of union of the muscles; h. Ovaries with the openings of the Oviducts into the Stomach. B. Ovaries; a. Oviducts. C. developement of the Ova (1 and 2) into young Actiniæ (3 and 4). D. Nervous System.

Fig. XI. (A. from TIEDEMANN in MECKEL's *Archiv*. B. C. from SPIX.) A. under-surface of an *Asterias*, the rays being cut away; a. nervous circle around the mouth; b. the smaller, c. central larger, nervous branches to the rays of the body. B. lobes of the liver from a ray of the *Asterias rubens*. C. cluster-shaped Ovary from the same.

Fig. XII. (From HOME's *Lect. on Comp. Anat.*) Vertical section of the great English Sea-Urchin: a. Mouth; b. Stomach; c. Intestine, the convolutions of which are cut through in front, in order to display the Œsophagus and dental apparatus; d. Anus.

Fig. XIII. Organs of Mastication of a small Sea-Urchin: A. viewed from the side; a. Teeth; b. Maxillæ; c. arches by which they are united. B. the inner surface, with the opening for the Œsophagus; c. transverse arches of the jaws, behind which the ends of the teeth project; d. rami to the Maxillæ from the ring around the Œsophagus.



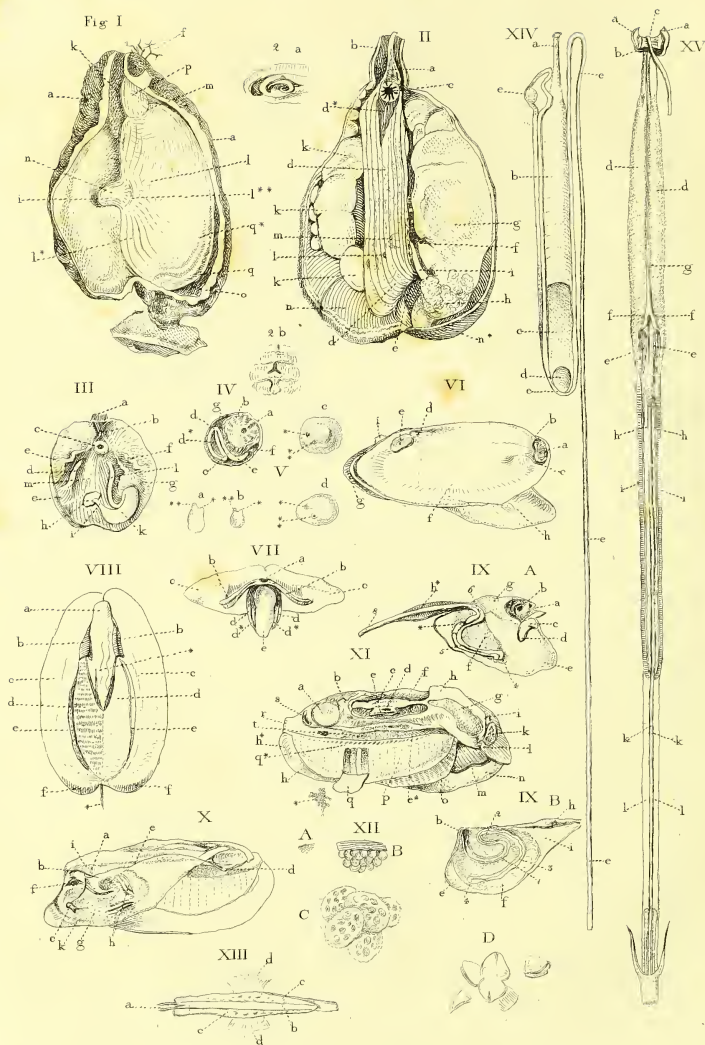


PLATE II. MOLLUSCA (*Acephala*).

Fig. I. A large Ascidia fixed by the stalk to a piece of coral rock. The external leathery shell (a. a.) is opened so as to expose its cavity lined by a white smooth membrane, and to shew the muscular sac (l.) surrounding the viscera, which is fixed by its two necks in the two tubular openings (k. i.) of the former : f. Zoophytes on the outer surface of the leathery shell; l.* radiated longitudinal fibres; l.** circular fibres of the muscular sac; m. contraction of the muscular sac at its oral extremity; n. anal tube; o. membranous sac, which appears to supply the place of the Heart; p. mouth-tube; q. a membranous canal, a kind of Aorta; q.* membranous stria.

Fig. II. The muscular sac (cloak) of another specimen, removed from the leathery shell, and opened : a. the membranous mouth-tube within the muscular one (b.) opened; c. the circle of plicæ (Valve) at the point where the membranous mouth-tube opens into the branchial sac, or Crop (d.); d.* the cavity of the branchial sac opened; e. commencement of the Œsophagus from the branchial sac; f. opening of the Rectum; g. the Liver; h. the Ovary; i. the Oviduct; k. testicle-like organ; l. its orifice appearing through the delicate branchial sac; m. the orifice of the anal tube, seen from within in the same manner; n. the internal, and n.* the external, surface of the muscular sac. Fig. 2, a. the valvular opening at the side of the branchial sac viewed from within. Fig. 2, b. the same from without.

Fig. III. The muscular sac of a young Ascidia opened, the branchial sac being removed : a. the mouth-tube; b. nervous ganglion, sending off fibres to the mouth-tube and anal-tube, c.; d. the tubular rudiments of the testicle-like organ; e. the blind appendages in which they terminate; f. the similar rudiments of the Ovary and the Liver, with the blind appendages, g.; h. the remains of the branchial sac; i. the Œsophagus; k. the Stomach; l. the Rectum; m. the interior of the muscular membrane.

Fig. IV. A still smaller Ascidia opened : a. internal opening of the mouth-tube; b. branchial sac, or Crop, seen from within; c. viewed from without; d. the Stomach; d.* its inner surface; e. Intestine; f. anal tube; g. muscular sac.

Fig. V. a. The very young animal within its outermost covering, which, however, is still gelatinous; b. the muscular sac, which is here blackish; c. a somewhat larger animal in its leathery shell or case; d. the muscular sac of the same. In all * is the anal, and ** the mouth, tube.

Fig. VII. The animal of the common Fresh-water Muscle (*Unio pictorum*). a. The anterior muscle closing the shells; b. the anterior superior; c. the anterior inferior; and d. the posterior muscle attaching the Foot to the shell; e. the posterior muscle closing the shells; f. the Cloak, open posteriorly, and beset with small Tentacula (g); h. the Foot; i. the anal tube of the Cloak.

Fig. VII. The same animal seen from before: a. the mouth; b. b. the four little lips, or branchial laminae, about it; c. the Cloak; d. the outer, and d.* the inner, larger branchial laminae; e. the Foot.

Fig. VIII. The same animal seen from below: a. the Foot (the true body of the animal); b. the little branchial laminae about the mouth; c. the Cloak; d. the inner branchial laminae; e. the outer; f. the little Tentacula at the posterior opening of the Cloak; * a probe introduced into the anal tube of the Cloak.

Fig. IX. A. the Foot opened from the right side. B. opened from the left: a. the mouth, which immediately expands into the Stomach; b. the opening leading to the Intestine (Pylorus), close to which are the orifices of the biliary ducts; c. d. the muscles marked b. c. in Fig. VI.; e. the point of the Foot; f. the Ovary; g. the Liver; h. the Heart; h.* the same opened; i. the posterior muscle from the Foot to the Shell; 1, 2, 3, 4, 5, 6, 7, 8, the convolutions of the Intestine laid open; * a longitudinal ridge within it.

Fig. X. The animal opened from the side, in order to display the Nervous System: a. lateral Ganglion of the mouth; b. superior filament forming the nervous circle around the mouth; c. inferior Ganglion of the nervous circle; d. posterior Ganglion; e. connecting filament; f. the mouth; g. the Ovary; h. convolutions of the Intestine; i. the Liver; k. the muscles of the Foot.

Fig. XI. The animal opened from the side, in order to shew the position of the Heart, &c.: a. b. i. k. l. are the muscles marked e. d. a. b. c. in Fig. VI.; c. the Heart; d. the opening into the right auricle, from e. the left, which receives the blood of the branchial veins. The latter is cut through, and the other half with the orifices of the branchial veins shewn at e*; f. the Pericardium; g. the Ovary, displayed by the reflection of the skin from the Foot and Cloak (h.); h.* little Tentacula; m. the little branchial laminae about the mouth; n. the





Foot; o. the internal branchial lamina of the right side; p. the outer one filled with young; q. a portion of the branchial membrane reflected, in order to display the compartments in which the young animals are lodged; q.* the orifices of these compartments, communicating above with the right Oviduct, which is laid open; r. the anal tube; s. the Rectum; t. the left Oviduct; * young animals taken from the right external Gill.

Fig. XII. A. a portion of the side of the Ovary; B. the same magnified, so as to render the little clusters of Ova more distinct; C. several Ova, containing the germs of the young animals, seen through the Microscope; D. the young animals taken out of the Gills, seen through the Microscope.

Fig. XIII. The Heart of a Muscle, opening at each extremity into an Aorta; a. the Rectum passing through it, slit open; b. the same, closed; c. the inner surface of the Heart, with three openings into the Auricle of each side; d. the Auricles receiving the branchial veins.

Fig. XIV. (From HOME, *Philos. Trans.*) Intestinal Canal of a Tereido. a. the Œsophagus; b. the Stomach; c. the septum dividing it into two halves; d. the orifice by which the two halves communicate; e. the Intestine.

Fig. XV. (From the same.) The internal organs of the same animal seen from the dorsal side: a. a. the boring shells; b. the digastric muscle; c. the Intestine running over it, and cut across in order to shew the remaining parts; d. d. the two Testicles; e. e. the Auricles of the Heart; f. f. the Ventricle; g. the Aorta; h. h. the branchial Veins; i. i. the Gills; k. k. the excretory ducts of the Testicles; l. l. strong muscular substance.

PLATE III. MOLLUSCA (*Gasteropoda*).

Fig. I. (From CUVIER, *Annales du Muséum.*) A *Helix pomatia* taken out of the shell, and viewed from the right side; a. a. the great Tentacula half extended; b. the small ones; c. the orifice through which the sexual organs protrude; d. the edge of the foot; e. e. fleshy band about the neck, formed by the consolidation of the Cloak, (the parts seated behind it never protrude from the shell;) f. respiratory orifice, and g. the opening of the anus at its margin; h. h. the pulmonary cavities, and

i. the mucous sac shining through the Cloak ; k. the principal vein of the Viscera running along the concavity of the convolutions ; l. the extremity of the Foot ; m. the point whither the muscles of the Foot take their course, in order to be attached to the columella of the Shell.

Fig. II. (From the same.) The animal viewed from the left side. The shell is taken away, the pulmonary cavity laid open, and the skin removed from the convolutions, in order to shew the Heart, mucous sac, &c. in their natural position : a. the larger Feeler of the right side half extended ; a.' the smaller one of the same side ; b. the opening within which the left greater, and c. that within which the left smaller, Feeler is retracted ; d. d. the two flaps of the upper lip ; e. e. the margin of the Foot ; f. f. two lobes placed under the band around the neck ; g. g. protuberant margin of the band around the neck ; h. h. transverse section of the covering of the pulmonary cavity ; i. the Rectum ; k. the respiratory aperture seen from within ; l. Diaphragm ; m. n. the Heart and Auricle exposed within the Pericardium ; o. commencement of the great artery of the convolutions ; q. the first, and r. the second, portion of the Intestinal Canal ; s. the lobes of the Liver.

Fig. III. (From the same) All the Viscera of the same animal unfolded, spread out, and several of them opened : a. a. the band about the neck seen from below ; b. the Rectum laid open ; c. the anus ; d. the mucous sac laid open, in order to shew the plicæ belonging to it ; e. the ascending part of its excretory duct, the descending part being concealed below the Rectum ; f. the larger Vena Cava running along the concavity of the convolutions ; g. another Vena Cava running along their convexity ; h. canal of communication between them, from which the anterior pulmonary arteries arise, whilst the lateral ones are given off from the Vein (f.) above the Rectum and excretory duct of the mucous sac ; i. the principal trunk of the pulmonary veins laid open ; k. the Auricle of the Heart opened ; l. the Ventricle opened, in order to display the valves at its orifice ; m. the origin of the Aorta ; n. the arterial branch for the Head ; o. o. o. o. four lobes of the Liver ; p. a part of the biliary duct laid open ; q. the Ovary ; r. the Oviduct, which enters the Uterus in the form of a slender thread ; t. the Testicle ; t.* the narrow portion of it ; u. its excretory duct ; v. the Bladder ; v.* its excretory duct ; w. the common canal for the Uterus and duct from the bladder, receiving also the ramified vesiculæ, x. x. ; y. the sac containing the little dart or style ; z. the common sexual cavity ; a. the body of the Penis ; a.' its appendage ; a." its muscles ; b. b. the Stomach ; b.' the point where it receives the biliary duct ;

c. c. the Intestine ; d. the salivary glands ; d. d. their excretory ducts ; e. the Œsophagus ; f. the fleshy mass of the mouth ; g. g. the greater Feelers ; h. the muscles retracting the mass of the mouth ; i. the muscles retracting the Foot ; k. the muscles of the great Feelers ; l. those of the small Feelers ; m. the cerebral ganglion ; n. the larger inferior ganglion ; o. the Nerve belonging to the right side of the pulmonary cavity ; p. the Nerve of the left side ; q. two Nerves to the Diaphragm and the pulmonary cavity ; r. r. the Optic Nerves ; s. a small ganglion below the mouth, formed by two Nerves coming from the cerebral ganglion.

Fig. IV. (From the same.) A part of the sexual organs of the same animal unfolded and laid open : a. the common sexual cavity ; b. the sac containing the little style, or dart *, attached to a papilla ; c. c. the ramified vesiculæ ; d. the entrance of the cavity common to the Uterus, Bladder, and ramified vesiculæ, into the common sexual cavity ; e. orifice of the Uterus ; f. part of the Uterus laid open ; g. the closed part of it ; h. h. the narrow process of the Testicle ; i. its excretory duct ; k. its opening into the interior of the Penis ; m. the two valves or prepuces of the Penis ; n. the Penis with its appendage ; o. the Bladder ; p. its canal.

Fig. V. (From the same.) The parts about the mouth in the same animal : a. a. the cerebral ganglion cut through and turned aside ; b. b. the Optic Nerves ; c. c. the sheaths in which the muscles of the great Feelers terminate ; d. d. the external coverings of the great Feelers retracted ; e. e. the Nerves of those coverings ; f. a small canal within, and in front of the mouth, formed by the reflection of the skin of the lips ; g. the upper (and sole) Maxilla ; h. h. the fleshy mass of the mouth, divided at its upper part so as to expose the Tongue ; k. the Œsophagus laid open ; i. i. the salivary ducts.

Fig. VI. (From the same.) The superior Maxilla of the same animal.

Fig. VII. (From the same.) The anatomy of the *Aplysia camelus*. The external membrane is divided longitudinally, the viscera being left nearly in their natural position : a. the fleshy mass surrounding the cavity of the mouth ; b. the muscle which connects it with the external mouth ; c. other muscles serving for the attachment and motion of this fleshy mass ; d. d. the Œsophagus ; e. the nervous collar of the neck, formed by three ganglia, together with the branches proceeding from it ; f. the Penis ; g. g. the first Stomach ; h. the second ; i. the third ; k. the Intestine ; l. the Rectum ; m. the Anus ; n. n. the Liver ; o. o. the Ovary and Oviduct ; p. the Testicle ; q. the Epididymis ; r. appendage to the Oviduct ; s. the common sexual duct ; t. the Bladder ; u. the lower nervous

ganglion ; v. the upper. Gills ; w. the lower ; x. the auricle of the Heart ; y. the Heart ; z. Artery of the Head ; a. its continuation ; b. b. the Artery of the Stomach, and the Hepatic Artery ; c. the Artery of the left side.

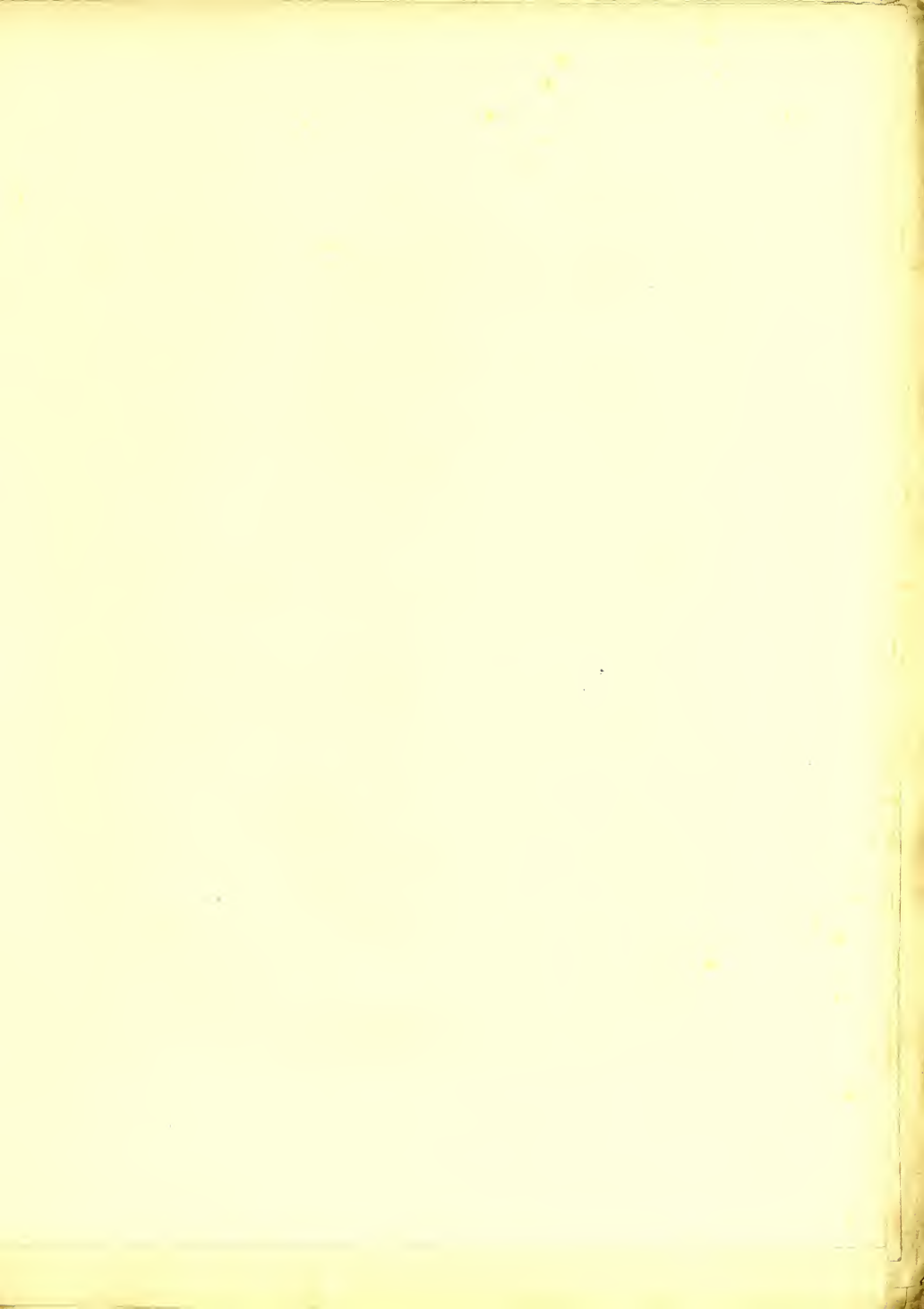
Fig. VIII. (From the same.) The Stomach of the same animal opened : a. a part of the inner surface of the first Stomach ; b. a part of the second Stomach seen from within, with its cartilaginous pyramids ; c. a part of the third Stomach seen from within, with its hooks ; in the second and third Stomachs are seen spots from which the pyramids and hooks have been detached ; d. the radii of the Pylorus ; e. the Cæcum ; f. the opening of the biliary ducts into the entrance of the Cæcum ; g. the Intestine.

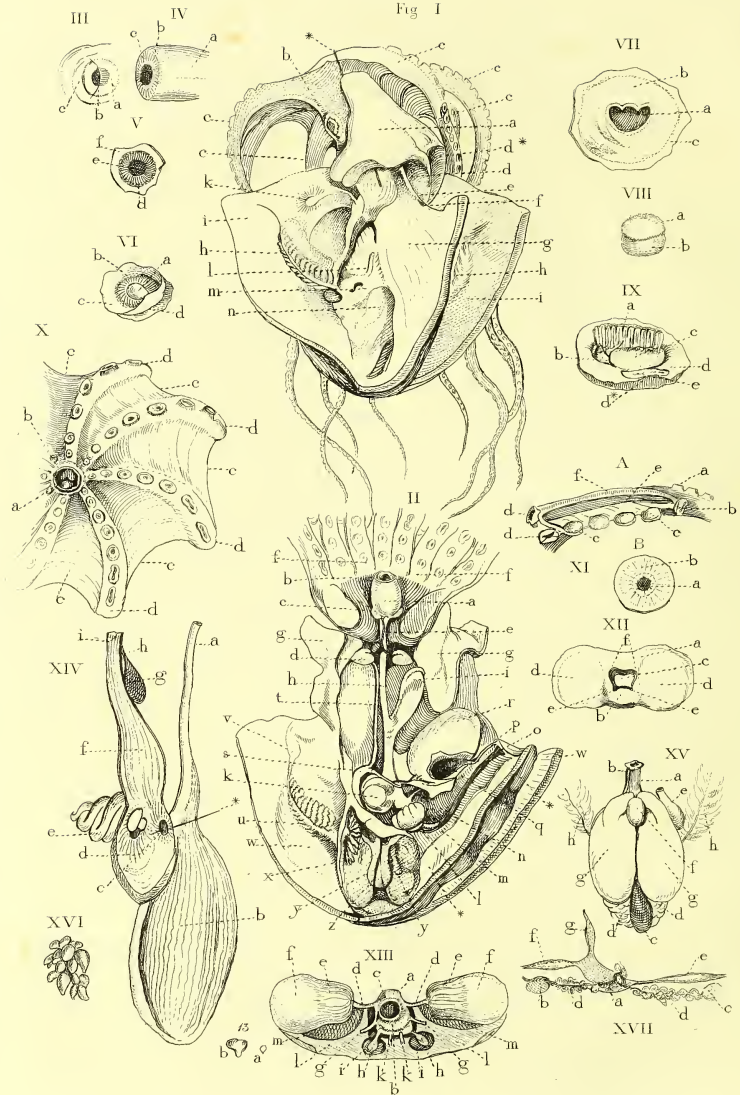
Fig. IX. (From the same.) The proboscis of the *Buccinum undatum*. In the first fig. the proboscis (b.) is fully extended by the powerful contraction of the circular muscle, e ; the retracting muscles (d) are stretched ; a. the sheath of the proboscis laid open ; c. the orifice of the proboscis ; g. the Œsophagus. The second fig. shews the point of the proboscis laid open and magnified ; h. the point of the Tongue ; i. the muscles of the cartilage of the Tongue ; g. the Œsophagus ; f. f. the salivary ducts.

Fig. X. (From the same.) A female of *Helix vivipara*. The anterior part of the animal is laid open, the posterior surrounded by the Peritoneum : a. the Foot ; b. the operculum attached to the posterior part of the Foot ; c. the little spouting tube, which is elongated under the right Feeler ; d. the margin of the Cloak ; e. the Gills ; f. the Uterus, distended with young ; g. its aperture ; h. the part of it concealed within the convolutions of the shell ; i. the Anus ; l. the mucous canal ; k. the Heart and Auricle ; m. the fleshy mass of the mouth ; n. the Œsophagus ; o. its turn in front of the Cardia ; p. the Stomach ; q. q. the two convolutions of the Intestine ; r. the place where it penetrates the branchial cavity ; s. the Rectum ; t. t. the two lateral Ganglia of the nervous collar, with the nerves which go to the Feelers, Eyes, and Mouth ; u. u. the salivary glands ; v. the principal nervous trunk of the muscles.

Fig. XI. (From the same.) A male animal of the same species ; a. to v. as in the preceding fig. : y. the Penis, which protrudes under the right Feeler ; z. the Vas deferens ; a. a portion of the Testicle.

Fig. XII. (From SWAMMERDAM.) Ova and Fœtus of the viviparous Snail : 1, 2, 3, Ova ; a. fibres by which they are attached ; b. a fœtus floating and shining through ; c. a fœtus sunk to the bottom ; 4, a fœtus taken out of the Ovum ;





5. the same magnified. The shell (e.) is beset with little ciliæ, which are wanting in the full-grown animal. The Mouth, Feelers, and Eyes are recognizable, as well as the operculum (d.), and the Foot (f.)

Fig. XIII. (From the same.) The sexual parts of two individuals of the *Helix pomatia* approximated for the purpose of copulation: a. the Penis; b. the Pudendum.

PLATE IV. MOLLUSCA (*Cephalopoda*).

Fig. I. A *Sepia octopodia* opened from before in such a manner that the Cloak is divided on each side of its internal septum, and, consequently, the sac of the Peritoneum and the Gills exposed: a. the funnel through which fœces, ova, and semen are discharged; * a Probe, introduced in order to shew the direction of its cavity; b. the right Eye; c. the eight Arms arranged around the head; d. the inferior orifice of the cavity of the funnel; d.* a blind sac on each side of the funnel; e. orifice of the ink-duct; f. the Rectum; g. the muscular septum of the cavity of the Cloak, which, however, does not exist in the *S. officin.*; h. the Gills; i. the inner surface of the Cloak; k. the radiiform nervous ganglion on each side of the Cloak; l. the excretory duct of the sac secreting mucus; m. the orifice of the seminal duct: (both canals have the same disposition on the left side, and, as the organ represented at z. in fig. II. from which both seminal ducts arise, appears on that account to be a Testicle, and not an Ovary, I am inclined to believe, as far as the examination of two specimens may authorize, that the *S. octopodia*, besides two Oviducts, has two, and not, as CUVIER supposes, but a single seminal duct :) n. the peritoneal sac forming the cavity of the abdomen.

Fig. II. The same animal still farther opened, the Infundibulum being divided and reflected, and the Peritoneum cut into: a. the fleshy mass of the month; b. the beak; c. the superior, d. the inferior, Salivary Glands; e. the excretory duct of the latter; f. the circle of Arms; g. g. the Infundibulum divided; h. the Œsophagus; i. the Crop; k. the Gizzard; l. the Cœcum; m. the Intestine; n. the biliary duct; p. the ink duct; q. the ink bladder; r. the Liver; s.

the Heart; t. the artery of the Head; u. the Gills; v. their ligament; w. the inner surface of the Cloak; x. the gill-like organ of the cavity secreting mucus, laid open from its excretory duct (m. fig. I.); z. the Testicle, with two seminal ducts; * the septum of the Cloak.

Fig. III. The Eye of a *S. octopodia* viewed from without: a. the posterior eyelid, formed by thin membrane; b. the Pupil, partly shining through the posterior eyelid; c. the anterior eyelid, thicker, but smaller.

Fig. IV. The same Eye detached: a. the Sclerotica, which, like an Iris, forms the Pupil (c.)

Fig. V. The same Eye viewed from before: the Iris (f.) is divided and reflected; d. a second Pupil, formed by the plicated prolongation (e.) of the Choroid, (Corpus ciliare, or perhaps true Iris.)

Fig. VI. The Corpus ciliare viewed from within: a. the Crystalline; b. the Corpus ciliare; c. the Choroid; d. the Sclerotica.

Fig. VII. The Eye of the *S. officinalis* seen from without, after the removal of the Conjunctiva: a. the reniform Pupil, formed by the anterior surface (b.) of the Iris; c. the proper Sclerotica.

Fig. VIII. Crystalline Lens of the same Eye: a. the posterior surface; b. the groove into which the Corpus ciliare is inserted.

Fig. IX. The entrance of the Optic Nerve into the same Eye: a. the nervous fibres passing through the Choroid (c.) in a line; b. a vessel; d. the Sclerotica reflected, with a cartilaginous lamina (e.) on its inner surface; d.* the outer surface of the Sclerotica.

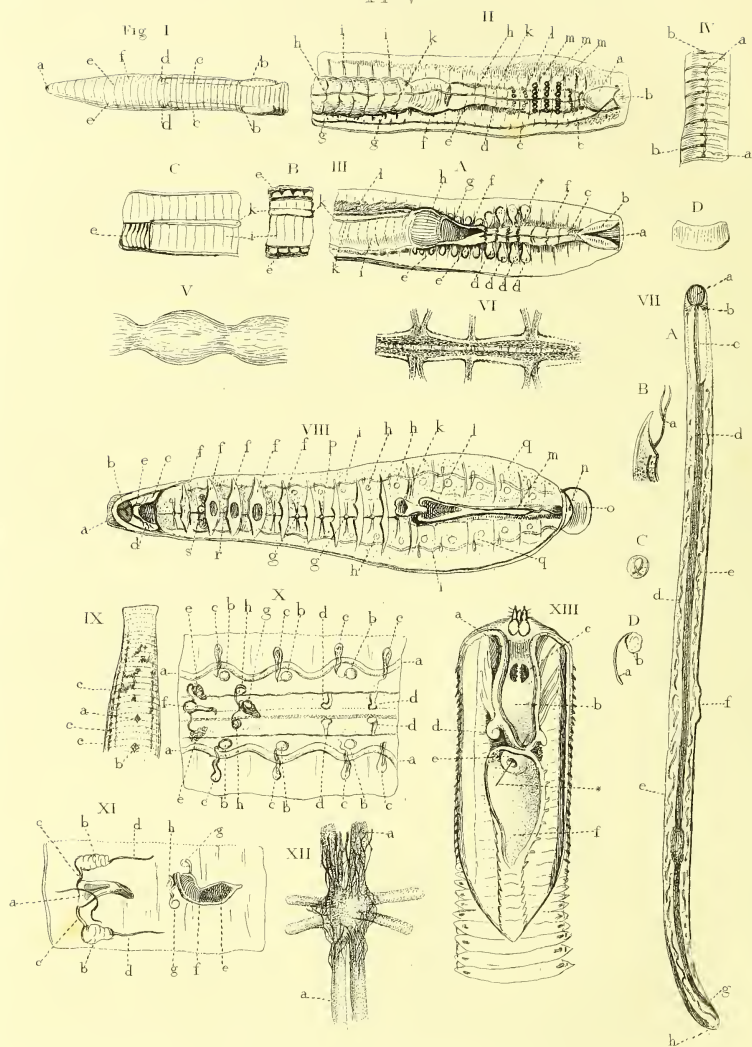
Fig. X. Half of the circle of Arms surrounding the mouth of the *S. octopodia*: a. the beak, with the lower part projecting above the upper; b. the edges of the lips around the beak; c. the membrane expanded between the Arms; d. the Arms beset with sucking papillæ.

Fig. XI. A. An Arm divided longitudinally, in order to shew the double stratum of muscular fibres: a. sucking papillæ; b. small ones, turned down with the skin; c. c. several papillæ seen from the dorsal side; d. one cut through. B. One of the large sucking papillæ of the natural size: a. a depression upon it; b. the muscular margin.

Fig. XII. Cartilage of the Head of a *S. officin.* viewed from below: a. the upper part, which covers the cerebral ganglion; b. the lower or anterior part, containing the Organ of Hearing; c. the central opening; d. the outer side of



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the orbital surfaces; e. excavation for the exit of Nerves; f. a part of the internal groove for the reception of the nervous collar of the neck.

Fig. XIII. (From SCARPA, *De Auditu et Olfactu*.) Cartilage of the head, cerebral ganglion, &c. of a *S. officin.*: a. the cerebral ganglion; b. nervous collar around the Œsophagus (c.); d. Optic Nerves; e. their ganglia and ramifications; f. the Eye; g. k. nerves of the viscera and Cloak; h. little auditory sac, with the Auditory Nerve; i. the cavity for the Labyrinth in the Cartilage of the Head (l.); m. the Orbits. Fig. 13, Lapillus from the Ear of the same animal: a. of the natural size; b. magnified.

Fig. XIV. (From HÖME, *Lect. on Comp. Anat.*) Intestinal Canal of the Calmar (*S. loligo*): a. the Œsophagus; b. the Stomach; c. its transition into a dilatation at the commencement of the Intestine (d.); * a probe introduced; e. the Cæcum; f. the Rectum; g. the ink bladder; h. its excretory duct opening at the margin of the Anus (i.)

Fig. XV. (From SWAMMERDAM.) The visceral sac of the *S. officin.* formed by the Peritoneum: a. the Rectum; b. the ink duct; c. the ink bladder appearing through the Peritoneum; d. the Ovary seen in the same manner; e. the Oviduct; f. a part which contains a red fluid; g. two large glandular bodies.

Fig. XVI. A part of the Ovary of the same animal.

Fig. XVII. The Hearts of the same animals: a. the aortal Heart; b. c. the two Hearts of the branchial Arteries; d. the Venæ Cavæ, beset externally with glandular bodies; e. f. the Auricles of the aortal Heart, or great branchial Veins.

PLATE V. VERMES.

Fig. I. The superior extremity of a pregnant Earth-Worm (*Lumbricus terrestris*) viewed from the abdominal surface: a. the Mouth; b. a circular fold; c. a slighter continuation of this fold; d. the termination of this fold, (in small or unimpregnated individuals these parts are scarcely if at all perceptible;) e. an inner, f. an outer, row of double fossæ, from which the little bristles employed in progression, though scarcely perceptible, project.

Fig. II. The same part magnified and opened from below : a. the Pharynx ; b. the nervous collar of the neck ; c. the chain of Ganglia ; d. the Œsophagus ; e. the Crop ; f. the Gizzard ; g. the Intestine covered by the Liver ; h. the abdominal vessel, (Vein) ; i. the transverse ligaments of the body ; k. lateral branches of the abdominal vessel ; l. larger ones of the same kind ; m. the principal branches of communication between the abdominal and dorsal vessels, swelling into rows of Hearts.

Fig. III. A. The same portion opened from above, together with the Stomach and Intestine ; a. the Mouth and Pharynx laid open ; b. the muscles of the Pharynx ; c. the Œsophagus ; d. the Ovaries with Ova ; e. respiratory vesicles ; f. transverse ligaments ; g. cavity of the Crop ; h. cavity of the Stomach ; i. cavity of the Intestine ; k. projection into the Intestine, (probably an Oviduct) ; l. the Liver.—B. A portion of the body of the same animal opened more laterally, together with the Intestine.—C. A portion nearer to the caudal extremity, where a part of the coats of the Intestine has been removed in order to display the respiratory vesicles more distinctly : in this part, too, the projection into the Intestine ceases.—D. The transparent inner membrane of the Gizzard.

Fig. IV. The dorsal side of the middle part of the body of the same animal : a. the dorsal vessel, (Artery) ; b. respiratory apertures, (Stigmata).

Fig. V. Some of the heart-shaped dilatations of the vessels (fig. II. m.) much magnified.

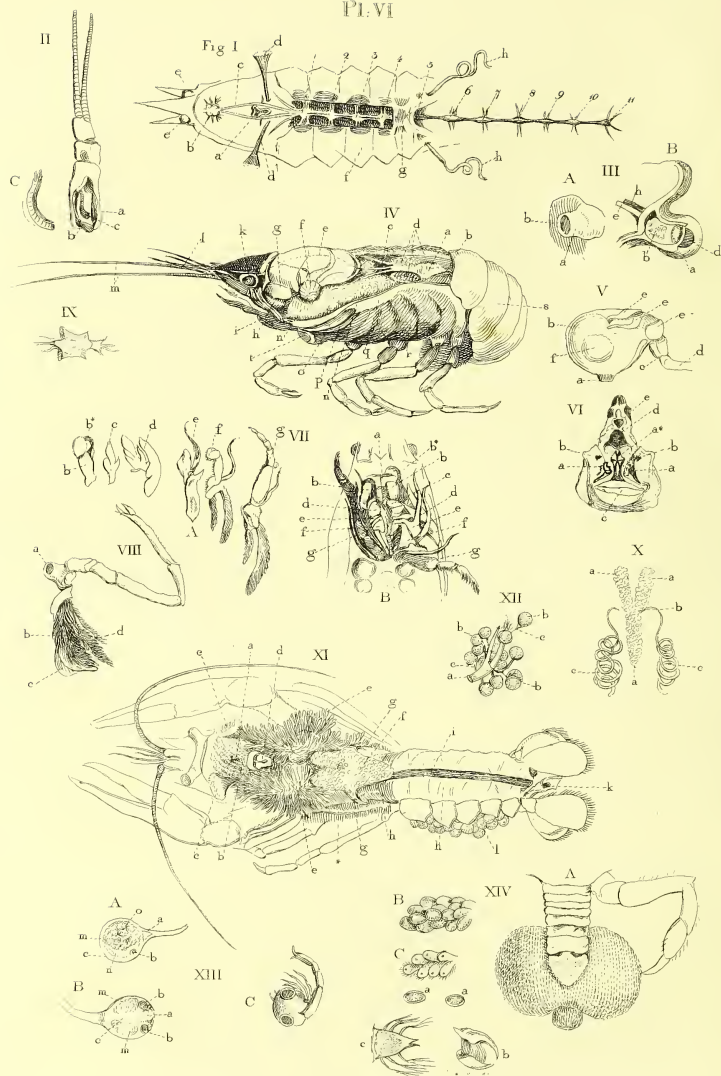
Fig. VI. A portion of the chain of Ganglia from the anterior part of the body.

Fig. VII. (From RUDOLPHI, *Entozoorum historia*.) A. The female of the *Cucullus elegans*, found in the Perch : a. the hood, (cucullus) ; b. little hooks, or more probably vessels ; c. the anterior part of the body, in which we observe only the alimentary canal ; d. the Intestine ; e. the Oviduct with living young ones ; f. the Pudendum ; g. the Anus, near to which is the blind termination of the Oviduct, h. the rounded extremity of the body. B. The caudal extremity of the male of the *Cucullus marinus* ; a. the Penis. C. The Ovum of *C. elegans*, with the foetus. D. The little Worm (a.) with the caudal extremity attached to the membranes of the Ovum (b.)

Fig. VIII. A Leech (*Hirudo medicinalis*.) opened longitudinally, together with the Intestinal Canal, from the dorsal side : a. the sucking surface of the mouth ; b. the cavity of the Mouth opened, with an internal view of its triangular



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aperture; c. muscles of the Pharynx; d. cavity of the Pharynx; e. cerebral Ganglion above it; f. the perforated septum of the Stomach; g. the chain of Ganglia; h. the respiratory vesicles; i. the lateral vessel; k. the Pylorus; l. dilatation at the commencement of the Intestine; m. the Intestine; n. the Anus; o. the anal sucking surface; p. the cavity of the Stomach; q. the Cæca; r. the female, s. the male, genital organs.

Fig. IX. Cephalic extremity of the Leech seen from the abdominal side: a. the male; b. the female sexual opening; c. c. c. Stigmata.

Fig. X. Inner abdominal surface of the anterior part of the body of a Leech, after the removal of the lining membrane of the Stomach, (magnified): a. lateral vessels; b. respiratory vesicles; c. plexuses of vessels which appear to be closely related to the respiratory organs; d. Testicles; e. the two Epididymes; f. the Penis; g. the Vagina; h. the Ovaries.

Fig. XI. The sexual Organs of the Leech displayed separately: a. the Penis laid open, with some fibres within it; b. the Epididymes; c. the great seminal canal; d. the seminal duct; e. Vaginæ, or receptacles for Ova, with their ducts, (f.); g. Ovaries; h. Oviduct.

Fig. XII. A single nervous Ganglion from the chain of Ganglia, surrounded by many delicate vessels; a. the longitudinal nervous cord.

Fig. XIII. (From HOME's *Lect. on Comp. Anat.*) Cephalic extremity of a Nereis, opened from below: a. the Mouth; b. the Stomach; c. the Teeth situated at the entrance of the Stomach; d. little Cæca; * a Probe introduced into the Pylorus, (e.); f. the Intestine.

PLATE VI. CRUSTACEA.

Fig. I. A male Cray-fish (*Astacus fluviatilis*,) opened from above; the viscera are removed; the tail is cut away, with the exception of the Chain of Ganglia. The canal in which the Chain is lodged above the legs, and formed by the horny laminae to which the legs are attached, (a kind of vertebral canal, though placed on the abdominal surface,) is for the most part broken away so as to expose the whole extent of the central part of the Nervous System: a. the Oesophagus cut

through immediately behind the triangular Mouth; b. the cerebral Ganglion; c. the nervous collar of the neck, with a pair of Nerves arising from each side: the remaining eleven Ganglia are designated by figures: d. the bony pedicle and muscles for the Mandibulæ; e. the Eyes; f. the horny laminae forming the canal for the chain of abdominal Ganglia; g. a part of this canal not broken open; h. the lower extremities of the seminal ducts.

Fig II. (From ROSENTHAL in REIL's *Archiv.*) The small Antenna of the Lobster viewed from below, with the under side of the tube broken away, so as to shew the longitudinal concha: a. the edge of the Shell; b. the Concha; c. the striated arch-shaped groove. C. the same magnified.

Fig. III. (From SCARPA *de Auditu et Olfactu.*) The organ of Hearing of the Cray-fish magnified. A. a. viewed from without; b. the Membrane of the Fenestra Vestibuli: B. viewed from within: a. the bony papilla opened lengthways; b. the auditory sacculus; d. a part of the membrane of the Fenestra Vestibuli; e. the Auditory Nerve; h. a ligamentous substance connecting the sacculus to the inner part of the Cranium.

Fig. IV. The internal organs of the male of the same animal after the removal of the dorsal scutum: a. the Heart; b. and c. arteries running forwards and backwards; d. Testicles; e. Stomach; f. muscle of the Mandibula attached to the dorsal scutum; g. stony concretion; h. a greenish organ, probably a kind of salivary gland; i. external Mandibulæ; k. the Eye; l. the small, m. the large, Antennæ; n. the Liver; o. p. two horny laminae attached to the third and fourth pairs of Maxillæ, and serving to expel air or water from the Gills; q. horny laminae separating the Gills from the internal organs; r. the Gills attached to the pairs of legs; t. the point from which the Nippers have been removed; s. the Tail.

Fig. V. The Stomach of the Crab viewed externally: a. the Œsophagus; b. the fundus of the Stomach; c. the Pylorus; d. the Intestine; e. the Skeleton of the Stomach; f. the stony concretion.

Fig. VI. The same opened from the Œsophagus lengthways, and at the lower part: a.* the great central teeth of the stomach; a. a. the two large lateral teeth; b. b. the two small lateral teeth; c. the bony lamina on the anterior and larger, or cardiac portion of the Stomach; d. the smaller or pyloric portion of the Stomach; e. the entrance to the Intestine.

Fig. VII. The pairs of Maxillæ of the Crab. A. In the detached state:

b. a Mandibula; b.* its Feelers; c. the innermost or fifth, d. the fourth, e. the third, f. the second, and g. the first Maxilla, the three outermost of which are also furnished with Feelers. B. The same parts around the mouth: on the right side in the state of inaction, on the left separated from one another: a. the upper lip; the remaining references as in A.

Fig. VIII. The middle leg of the left side in a female Crab, in order to show the compleat transition from Maxillæ to legs, the one as well as the other having branchiæ attached to the root. (See fig. VII. A. g.) a. the female sexual opening; b. tufts of branchiæ on the great branchial lamina (c.); d. small tufts of branchiæ.

Fig. IX. The Heart of the Cray-Fish.

Fig. X. The Testicle of the male of the same animal: a. a. a. three lobes of the Testicle; b. commencement of the seminal vessels; c. c. the great convoluted processes of the seminal vessels.

Fig. XI. A female Crab laid open, by removing the dorsal scutum and breaking up the tail: a. the commencement of the pharynx; b. the space occupied by the Stomach, which has been removed; c. c. the muscles of the Mandibulæ; d. the triangular Pylorus cut across; e. hepatic cæca; f. the Ovary lying upon the Intestinal Canal, its Oviducts (g. g.) surrounding the Intestine and several of the muscles of the tail, and descending to the papillæ at the roots of the middle pair of feet; h. the muscles of the tail; i. the Rectum; k. the Anus; l. Ova attached to the under part of the tail; * the horny septum, on the outside of which the Gills are attached.

Fig. XII. One of the small caudal Fins, to which the Ova are attached: a. the nipper-like Fin itself; b. the Ova; c. their pedicles.

Fig. XIII. (From CAVOLINI on the Generation of Fishes and Crustacea.) A. B. mature Ova from the tail of the female Cancer *depressus*. A. magnified 64 times: a. thread of mucus which attaches the Ovum; b. the Eye; c. the Shell; m. the more developed part of the fœtus; n. the Heart; o. the Yolk. B. the same Ovum viewed from above: a. the front part of the fœtus; b. b. the Eyes; c. the Heart; m. m. the Yolk. C. a perfect fœtus taken out of the shell and magnified.

Fig. XIV. (From the same.) A. Ovarial sac of a *Monoculus cyclops* attached to the tail of a Pungier. B. a mass of immature Ova from the same sac,

magnified 64 times. C. a series of the same Ova : a. a. Ova ; b. shell of an empty Ovum ; c. the fœtus magnified 64 times.

PLATE VII. INSECTS.

Fig. I. (From TREVIRANUS, *Ueber den innern Bau der Arachniden*.) Maxillæ, Tongue, and Intestinal Canal of the *Aranea domestica* : r. r. Maxillæ ; i. i. tufts of hair upon them ; h. the Tongue, with the slit-like opening of the Pharynx ; q. q. the roots of the Antennæ ; a. the Œsophagus ; v. v. the two greater, b. b. the two smaller, pouches of the Stomach ; c. continuation of the Pharynx, which expands into a delicate net-work closely connected with the corpus adiposum (d.), from which the funnel-shaped Intestine (f.) proceeds, dilating inferiorly into the Rectum (g.), with a Cæcum (n.) attached to it, into which open four biliary vessels (e. e. e. e.) ; z. the Anus ; t. t. the feelers of the spinning organ.

Fig. II. (From the same.) Mandibula of the *Aranea diadema* : a. the lower portion ; d. three teeth on the inner side ; a.* the articulated venom tooth or hook ; q. the venom-bag ; p. its excretory duct.

Fig. III. (From the same.) Intestine-like pouches for the secretion of the viscous fluid from which the threads are spun in the *Aranea atrox* : a. b. two smaller and two larger vessels ; v. v. the smaller pouches ; q. q. the anterior spinning tubercles ; p. p. the spinning Palpi (Feelers).

Fig. IV. (From the same.) Spinning tubercles of the *Aranea atrox* : r. r. the anterior larger tubercles (with two joints) ; c. c. the posterior smaller ; a. the Anus ; p. p. the spinning Palpi.

Fig. V. (From the same.) Nervous System of the Spider : m. medullary mass of the thorax, from which the nerves for the legs radiate in cones : a. the cerebral ganglion ; e. i. nerves to the organs of mastification ; r. the double nervous cord ; b. abdominal ganglion ; p. p. p. n. nerves to the Intestine, respiratory and genital organs, &c.

Fig. VI. (From the same.) Respiratory organs of Spiders. A. one of the two superior dorsal stigmata of the *Aranea diadema*. B. the Gills of a female of

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the common Spider, viewed from the inner side: a. two cartilaginous projections belonging to the female sexual organs; b. b. the Gills.

Fig. VII. (From the same.) Heart and adipose bodies of the *Arenea domestica*: a. b. the Heart, from which, besides small lateral vessels, arise four larger, arch-shaped (v. z.); p. p. the adipose bodies; f. f. cavities below the second pair of dorsal Stigmata, into which blood appears to be effused.

Fig. VIII. (From the same.) Sexual organs of the *Arenea domestica*. A. male: a. small cavities surrounded by delicate muscles; b. seminal duct; c. Testicle; d. its vessels. B. female: a. projecting papillæ, probably convolutions of the Oviducts; b. a portion of the abdominal parietes; c. Oviducts; d. Ovaries.

Fig. IX. Organs of Digestion of the European Scorpion: a. the Tongue; b. the Os Hyoides; c. to h. the alimentary canal; k. the Anus, armed with its venom-bag and sting; e. a contraction of the alimentary canal; d. f. biliary vessels; i. i. i. i. five vessels proceeding from the alimentary canal to the corpus adiposum (g.)

Fig. X. (From HEROLD's *Entwicklungsgeschichte des Schmetterlings*.) The Nervous System of the Caterpillar (A.), Pupa (B.), and Butterfly (C.), of the *Papilio brassicæ*; in which may be observed the gradual curtailment of the nervous cord, as well as the aggregation and disappearance of the Ganglia marked by numbers.

Fig. XI. The Caterpillar of the Sphinx *Euphorbiæ* opened from the dorsal side: a. Mandibulæ; b. the scutum of the Head; c. the Œsophagus; d. d. the Stomach, occupying nearly the whole length of the animal; e. a dilatation of the Intestine; f. the biliary vessels lying upon the Stomach; g. excretory duct, and h. h. the bodies of the spinning vessels; i. i. adipose bodies; k. a tuft of Tracheæ; l. the same on the opposite side, where the upper branches have been removed; m. canals of communication between two Stigmata; n. the Horn.

Fig. XII. A. lower part of the Stomach and Intestine of the same animal: a. the Stomach, with transverse and longitudinal folds; b. the upper, and c. the lower, dilatation of the Intestine; d. the Rectum. B. a transverse section of the Stomach, in order to shew its longitudinal folds.

Fig. XIII. A part of the dorsal vessel of the same animal, with the fine ramifications of Tracheæ attached to it.

Fig. XIV. (From SWAMMERDAM.) Eyes of the male Bee. A. a Bee's

Head: a. three simple Eyes (Stemmata); b. Antennæ; c. the compound Eye of the left side (undisturbed). The Cornea is removed from the right (d.), in order to expose (e.) the little pyramidal bodies (§. 117.) attached to the Choroid. (f.) B. a section of the Eye: a. the cerebral ganglion; b. swelling of the Optic Nerve; c. the Cornea; d. the nervous fibrils perforating the Choroid. C. some of the hexagonal facets of the Cornea, with the hairs(*) interposed.

Fig. XV. Intestinal Canal of the Pupa of the Sphinx *Euphorbia*, at six days: a. the Œsophagus; b. the Stomach; d. the Intestine; c. the biliary vessels.

Fig. XVI. Intestinal Canal of the Butterfly of the same animal: a. b. c. d. as in fig. XV.; e. the Colon and Cæcum; f. sac appended to the Œsophagus. The gradual contraction of the Stomach may be observed by the comparison of fig. XI. XV. and XVI.

Fig. XVII. A part of the abdominal surface of the *Phalæna cossus*, on which are seen on each side the sucking papillæ, or feet, (a.) beset with little hairs, and between them four Stigmata.

Fig. XVIII. A. one of the Stigmata magnified. B. a little branch of a Trachea, also magnified.

Fig. XIX. Two pulmonary sacs of the Sphinx *Euphorbia*.

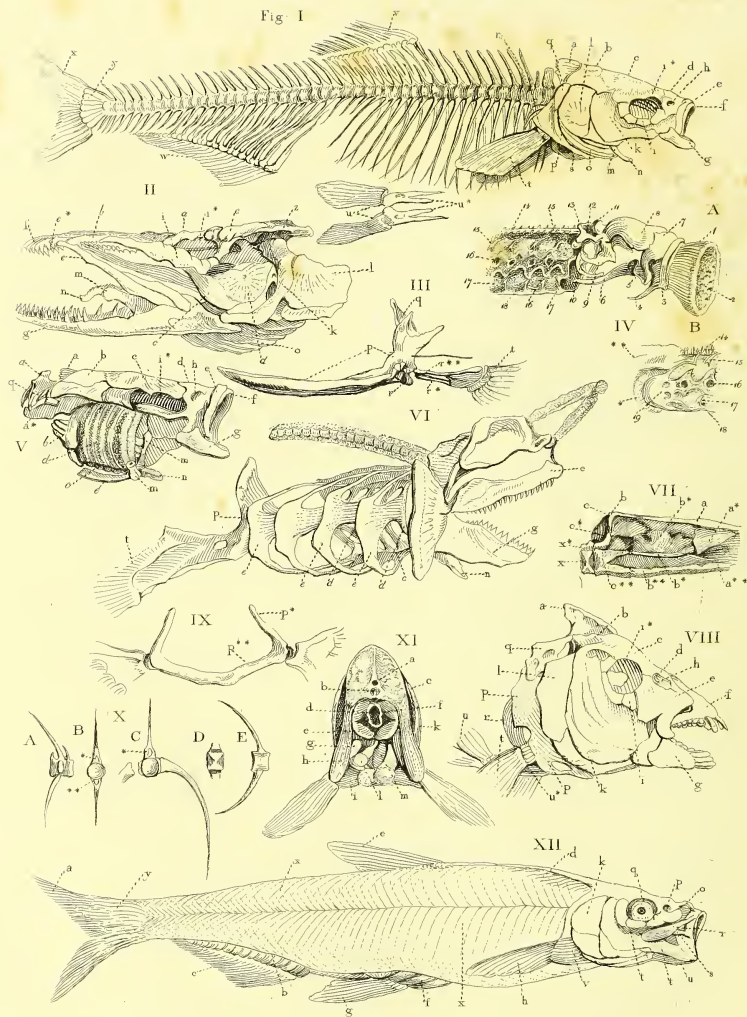
Fig. XX. (From MARCEL DE SERRES, *Annales du Muséum*.) A. Intestinal Canal of the *Blatta occidentalis*: a. the upper lip; b. the lower lip with its feelers (c.); d. the Tongue; e. the Œsophagus; f. the Crop; g. the muscular Stomach (Gizzard); h. Cæca, (superior biliary vessels, according to SERRES); i. the third Stomach (Duodenum, according to SERRES); k. the biliary vessels; l. the Rectum. B. The Crop, or first Stomach (a.), and Gizzard, or second Stomach (b.), opened; d. the Cæca opened. C. One of the horny teeth of the Gizzard.

Fig. XXI. A. Apparatus of air sacs and tubes in the abdomen of the *Gryllus verrucivorus*: a. the principal trunk of the Tracheæ; b. the lateral, c. the middle, pulmonary sacs. B. The great pectoral Stigma, capable of being closed by an eyelid-like valve; x. the external opening leading to a sac, from which a large Trachea (y.) passes into the front leg. C. One of the smaller fissure-like Stigmata: * of the natural size; ** magnified.

Fig. XXII. The Stomach of the *Gryllus verrucivorus* magnified: a. the membranous Crop; b. the second Stomach (Gizzard), armed internally with little



Fig. I



horny teeth ; c. the third Stomach ; d. seen from within ; at its fundus (e.) are brownish folds, which appear to supply the place of the Cæca, usually found in this situation.

Fig. XXIII. A portion of the Corpus adiposum from the same Insect, with a Trachea ramifying through it.

Fig. XXIV. Male sexual organs of the same animal : a. the Testicle ; b. the Epididymis ; c. the excretory duct of the two ramified Vesiculæ (h. i.) which communicates with the seminal duct. These organs are removed on the opposite side, where e. is the Penis, f. the caudal scutum, and g. the Rectum.

Fig. XXV. a. b. c. d. the little scales of the wings of various Phalænæ (magnified.)

Fig. XXVI. From HEROLD.) A. The female sexual organs of the recently hatched *Papilio brassicæ* : a. the Ovaries composed of series of Ova ; b. receptacle of Semen ; c. the single-horned secretory organ with the Bladder (d.) ; e. the secretory organ with two cornua ; f. the Rectum ; f.* the Cæcum ; g. the Vagina. B. Rudiment of the Ovaries in the full-grown Caterpillar. C. Rudiments of the Ovaries in the Caterpillar a few hours old.

Fig. XXVII. (From the same.) A. Male sexual organs of the nearly perfect Pupa of the same Insect : a. Testicle ; b. seminal vessels ; c. c. seminal vesicles (or ducts) ; d. the common seminal duct ; e. the Penis ; f. the Rectum ; f.* the Cæcum ; g. the horny spoon-shaped organ. B. The Testicle seen from below, with the seminal vessels. C. Rudiment of the Testicle in the full-grown Caterpillar. D. Rudiment of the Testicle in a Caterpillar a few hours old.

Fig. XXVIII. (From MACARTNEY, *Philosoph. Trans.*) One of the two little vesicles of the Glow-worm (*Lampyris*), which contain the luminous matter. It is opened in order to shew its elasticity, which is sufficient to prevent its sides from collapsing.

PLATE VIII. FISHES.

Fig. I. Skeleton of the *Cyprinus alburnus* : a. the Occipital Bone ; b. the Parietal Bone ; c. the Frontal Bone ; d. the Nasal Bone ; e. the Superior Maxillary

Bone, moveable and arched like the Inferior Maxilla ; f. the Intermaxillary Bone, likewise moveable and arched ; g. the Inferior Maxilla ; h. Fossa for the Olfactory organ ; i. arch of the Zygoma ; i.* the Orbit ; k. the Os Quadratum ; l. the Operculum ; m. the Lingual Bone ; n. the Lingual Cartilage ; o. the Radii of the branchial membrane ; p. Bones of the Shoulder ; q. Scapular appendage, by means of which the osseous belt of the shoulder is attached to the Cranium ; r. a rudiment of Bones of the Arm, supporting the Radii of the thoracic Fins ; s. Furcular Bone ; t. thoracic Fin ; u. abdominal Fin ; u.* a rudiment of the bones of the Pelvis, to which the abdominal Fin is attached ; v. dorsal Fin ; w. anal Fin ; x. caudal Fin, supported by (y.) the radiating laminæ of the last caudal Vertebra.

Fig. II. The head of a Pike : z. Temporal Bone ; a. Lachrymal Bone ; b. Anterior Palate Bone ; c. Posterior Palate Bone ; d. Os discoideum ; e.* middle portion of the Superior Maxilla ; e. lateral portion : the remaining references are the same as in the preceding Fig.

Fig. III. (From GEOFFROY, *Annales du Muséum.*) The bones of the Shoulder in the *Lophius piscatorius* : p. q. r. as in Fig. I. r.* and r.* * a kind of Ulna and Radius.

Fig. IV. A. The Head and Thorax of the Lamprey (*Petromyzon marinus* ;) 1. the fleshy funnel of the mouth, the inside of which (2.) is beset with little teeth ; 3, the double cartilaginous ring, which serves to support the fleshy funnel, and in some degree corresponds to the arch of the Intermaxillary Bone in the Carp Genus ; 4, lateral ramus of the Lingual Cartilage ; 5, lateral appendages of the Superior Maxillary Cartilage, corresponding to the Palate Bones ; 6, the long middle ramus of the Lingual Cartilage ; 7, Superior Maxillary Cartilage, comparable to the Superior Maxillary arch of the Carp Genus ; 8, a plate of Cartilage, which, being situated in front of the Spiraculum, can be compared to the Nasal Bones alone ; 9, and 10, inferior lateral processes of the Cranium, attached to it in the same manner as the lateral parietes of the Pelvis to the Sacrum ; 11, a conchoidal Cartilage at the extremity of the cranial cavity, closing the Olfactory cavities posteriorly, and, like an Ethmoid Bone, perforated by the Olfactory Nerves ; 12, the cavity of the Cranium, which is closed superiorly merely by a cartilaginous arch, (13.) at the base of this arch on each side is a globular projection, enclosing the organ of Hearing ; 14, the spinal canal, which is completely open above ; 15, superior branchial arches, or thoracic Ribs ; 16, the respiratory

apertures surrounded by two horizontal, flattened, cartilaginous laminae; 17, inferior branchial arches, or sternal Ribs; 18, the Sternum.

B. The extremity of the thoracic or branchial cavity, with the Pericardium; 14, 15, 16, 17, 18, as in the preceding Fig.; 19, the cartilaginous Pericardium; *. the Liver; **. muscular and cutaneous parts.

Fig. V. Head of the *Cyprinus rutilus*. The Operculum, Os Quadratum, and Palate Bones are removed, in order to display the branchial apparatus; a. b. c. d. e. f. g. i.* m. n. o. q. as in Fig. I.; a.* the postero-inferior process of the Occipital Bone, perforated at its base for the passage of the Aorta, and furnished with a lamina having teeth upon it; a. the first dorsal vertebra, furnished with remarkable transverse processes, and without any ribs attached to it; b. Maxillae of the Pharynx, (Ossa pharyngea); c. the sternal Cartilage; d. branchial arches, or, thoracic Ribs; e. posterior bony appendage of the Lingual Bone.

Fig. VI. (From GEOFFROY, *Annales du Muséum*.) Head and Thorax of the Long-nosed Shark. (*Squalo long-nez*. LACEPEDE): e. g. n. p. t. c. d. as in Fig. I. and V.; e. the external cartilaginous laminae and arches appended to the proper branchial arches.

Fig. VII. A vertical section of the Cranium of a Pike: a. the Frontal Bone; a.* anterior ala of the Sphenoid Bone; a.** anterior portion of the body of the Sphenoid Bone, an immediate continuation of the posterior portion; b. the Parietal Bone; b.* the great posterior ala of the Sphenoid Bone, which meets the corresponding one at the base of the cranial cavity, and excludes the body of the bone; b.** the posterior part of the body of the Sphenoid Bone; c. the superior, c.* the lateral, and c.** the basilar portion of the Occipital Bone; x. the first dorsal vertebra, with its funnel shaped articular cavity; x.* the spinal canal.

Fig. VIII. The Head of a Sparus, as an instance of a Fish where the rudiments of the bones of the Pelvis are placed below the bones of the Shoulder. The Teeth, also, are remarkable, the anterior being true Incisors, whilst the posterior, on the contrary, present merely spherical convexities. The references have the same meaning as in Fig. I.

Fig. IX. Belt of bones belonging to the Shoulder in a Ray: p.* is analogous to the Scapula, and p.** to the Clavicle, particularly if compared with the bones of the Shoulder in Amphibia. (Plate XI. fig. I. h. i. k. l. Fig. IV. c. b. Fig. XVI. A. B.)

Fig. X. Individual Vertebrae of the Skeleton in Fig. I. A. a dorsal vertebra,

viewed from the side, with the rib attached to it. B. a caudal vertebra viewed from behind; * the canal for the spinal Marrow; ** the canal for the Aorta C. a dorsal Vertebra with the Ribs attached to the transverse processes, seen from the front; * the canal for the Spinal Marrow. D. a vertical section of the body of a vertebra, in order to display the funnel-shaped articular cavities. E. a caudal vertebra viewed from the side.

Fig. XI. A vertical cross section behind the head of a *Cyprinus alburnus*, in order to display the pectoral fins and the kind of Diaphragm found in Fishes: a. spinal canal; b. bodies of the vertebræ; c. the Aorta; d. the Œsophagus; e. pharyngeal maxillæ; f. the muscles belonging to them; g. belt of bones of the scapular region; h. elevatory muscles of the pectoral Fins; i. depressors; k. Operculum; l. Heart; m. adductor muscles of the bones of the shoulder, forming the chief separation between the cavities of the Thorax and Abdomen, (in such a manner, however, that the Heart, though surrounded by the Pericardium, is actually contained in the Abdomen;) the duplicature of the Pericardium and Peritoneum evidently possesses less of the character of a Diaphragm than this muscular apparatus.

Fig. XII. The muscles of the same Fish, as they appear after the common integuments are removed: k. operculum; o. an elastic ligament for raising the superior maxillary arch; p. the nasal fossa; q. the ball of the Eye; r. a muscle, which with the following one depresses the superior Maxilla; s. retractor of the angle of the mouth; t. Elevator of the Inferior Maxilla; u. Depressor of the same part; v. abductor of the pectoral Fin (h.); x. the great lateral muscle, composed of numerous bundles of fibres; y. muscular fasciculus of the caudal Fin (c.); d. Elevator of the dorsal Fin (e.); muscular fasciculus of the abdominal Fin (g).

PLATE IX. FISHES.

Fig. I. Brain and Spinal Marrow of the *Cyprinus alburnus*, viewed from above: a. the Ganglia of the Olfactory Nerves, or rudiments of the Hemispheres; b. Optic Tubercles; c. Cerebellum; d. the Medulla Oblongata; as far as x. the spinal cord is lodged within the dorsal vertebræ, and after x. in the caudal: I,





Olfactory Nerves; 5, the Fifth Pair; Fig. 1. A transverse section of the Spinal Marrow somewhat magnified.

Fig. II. A portion of the ribband-shaped Spinal Marrow of the Lamprey, (*Petromyzon marinus*.) Fig. 2. A transverse section of it.

Fig. III. Brain of the Eel, viewed from above: a. the posterior; a.* the middle; and a.** the anterior Ganglia of the Olfactory Nerves. The remaining references as in Fig. I.

Fig. IV. The same viewed from below: e. the three inferior Ganglia at the basis of the second cerebral mass; f. the posterior appendage to the Brain, (Pituitary Gland,) small, and of a dark-red colour; 2, the Optic Nerves, decussating, and connected to the Brain by means of a Commissure. The remaining references as in Fig. III.

Fig. V. (From ARSAKY, *de Piscium Cerebro*.) Brain of a Flying Fish *Trigla lyra*, viewed from above: 1, 5, a. b. c. as in the preceding Fig.: b.* the Ganglia within the Optic Tubercles; d.* the pairs of Ganglia of the Medulla Oblongata.

Fig. VI. Brain of the Lamprey (*Petromyzon marinus*), viewed from above: b. b. the Ganglia of the Hemispheres, here distinctly developed; c. the Cerebellum, forming merely a narrow medullary band; a. b. d. as before; e. the flat Plexus Choroides covering the Fourth Ventricle.

Fig. VII. (From ARSAKY.) Brain and Spinal Marrow of the Tetradon *mola*, viewed from above: 1, a. b. c. as before; d. d. the short Spinal Marrow, furnished superiorly with several Ganglia; together with the Cauda equina formed by its Nerves.

Fig. VIII. Brain of a Carp, expanded, and seen from above: a. the Ganglia of the Olfactory Nerves, between and above which is the little membranous sac, (rudiment of the Pineal Gland,) appended to the cavity of the Optic Tubercles; b. the left Optic tubercle with its striated roof; b.* the internal Ganglia of the Optic Tubercles; b.** the striated roof of the right Optic Tubercle, reflected; c.* the Cerebellum divided so as to expose its cavity; c. c. a Ganglion situated below the Cerebellum; d. the Medulla Oblongata; g. Ganglia of the Branchial Nerve. Fig. 8. Optic Tubercles and Nerves of the same Brain, viewed from below, in order to shew the origin of the latter from the former; 2, the ribband-like Optic Nerves, longitudinally plicated; 2,* the Commissure of the Optic Nerves.

Fig. IX. (From ARSAKY.) Brain of the Shark, (*Squalus carcharias*),

viewed from above; a. Ganglion of the Olfactory Nerves; 1, Olfactory Nerves; 1,* the Ganglion upon them; b. Optic Tubercles; c. Cerebellum; d. Fourth Ventricle; 5, Maxillary Nerve, (Fifth Pair); 9, Branchial Nerve.

Fig. X. (From the same.) The same Brain laid open from above: h. the cavities of the Olfactory Nerves, and their Ganglia, the Hemispheres; i. the smooth cavity of the Optic Tubercles; k. the cavity within and below the Cerebellum; d. the Medulla Oblongata.

Fig. XI. The cephalic extremity of the Sympathetic Nerve in the Burbot, (*Gadus lota*;) 5, 7, 9, the fifth, seventh, and ninth Pairs of cerebral Nerves; l. the basis of the Cranium; m. the Spinal Nerves; n. n. the Sympathetic Nerve.

Fig. XII. The Eye of the Pike: a. the entrance of the Optic Nerve; b. the Retina; c. a process of the choroid, connected with the capsule of the Lens, and supplying the place of the Ciliary Processes; d. the Iris, or rather Uvea; e. the Cornea; f. the second attachment of the capsule of the Lens; g. the Lens within its capsule.

Fig. XIII. (From SCARPA, *de Auditu et Olfactu*.) The Labyrinth of the *Lophius piscatorius* lodged within the cavity of the Cranium: a. a. a. the three semicircular Canals; b. the small, posterior Ampulla, with its little bony concretion; c. the anterior, larger one; d. the branch of the Auditory Nerve to the Ampulla corresponding to the Vestibule; e. the Nerve for the Semicircular Canals; f. h. maxillary branches; 5, the Nerve of the Fifth Pair. A third bony concretion is placed at the anterior extremity of the anterior Semicircular Canal. Fig. 13. The bony concretion from the greater Ampulla of the Burbot.

Fig. XIV. The head of a young *Silurus glanis* of the natural size. The integuments and arch of the Cranium are removed, and the Branchiæ of the left side exposed: a. the Hemispheres; 1, the Olfactory Nerve; 1,* its Ganglion; b. the Optic Tubercles; c. the Cerebellum; c. c. several Ganglia situated behind it; d. the Spinal Marrow; 2, the Optic Nerve; 5, the Maxillary; 5,* two branches from it to the great Cirrhi; 9, the Branchial Nerve; g. the smaller Cirrhi; h. the Labyrinth, lodged within the cranium close to the Brain; i. i. i. i. the four branchial laminae of the left side. In the Eye, the fissure of the Choroid is visible.

Fig. XV. The Eye of the Carp half divided, the Lens and Vitreous Humour being removed: a. the Cornea; b. the Iris; c. the cartilaginous, and d. the softer part of the Sclerotica; e. the Choroid; f. the Retina; g. the entrance of the Optic Nerve; h. the choroideal Gland: Fig. 15. A part of the same Eye some-

what magnified, in order to shew how the inner layer (e.) of the Choroid (Membrana Ruyschiana) is reflected inwards to form the Uvea (b.), whilst the outer (e.*) forms the Iris (b.*), and is connected with the Cornea (a); c. the Sclerotica.

Fig. XVI. The Vitreous Humour (b.) and Lens (a.) of the same Eye.

Fig. XVII. (From SCARPA.) The Olfactory Organ of a Dog-fish (*Squalus catulus*): a. the dorsal surface of the membrane covering the nasal concha; b. the distribution of the Olfactory Nerve (d.); c. its ganglion.

Fig. XVIII. A male Burbot (*Gadus lota*) laid open, in order to shew the position of the various viscera: the branchial membrane, also, (c.) is stretched, in order to display the Gills: a. the Heart; d. the abdominal Fin; e. the pectoral Fin; f. the inferior layer of the Pericardium; g. the Liver; h. the Testicles; i. the Spleen; k. the Intestine; l. the Rectum; m. the Bladder; n. the Anus; o. the anal Fin.

Fig. XIX. The Viscera of the same animal, the left Testicle and Intestinal Canal being removed, and the Liver thrown back: h. l. m. as in the preceding fig.; g.* the inferior surface of the Liver; p. p.* branches of the Vena Portæ; q. Œsophagus; q.* Stomach; r. the Swim-bladder; r.* its left horn; s. the Gall-bladder; t. the digital appendages of the Pylorus; u. the commencement of the Intestine; w. the lower end of the Kidney; x. the orifice of the Rectum; y. the opening of the urinary and seminal canals.

Fig. XX. (From HOME, *Lect. on Comp. Anat.*) Stomach and Intestine of the Sturgeon (*Accipenser sturio*): a. the Œsophagus; b. the great end of the Stomach; c. the Pylorus, with the mass of finger-like appendages, which appear to supply the place of the Pancreas; d. the large Intestine, with its spiral valve.

Fig. XXI. (From the same.) The Stomach and Intestine of the Lophius *piscatorius*: a. the Œsophagus; b. the first Stomach; b.* the second; c. the Pylorus, with several cæcal appendages; d. the Intestine.

Fig. XXII. The Stomach and Intestine of the *Gymnotus electricus*. The references as in the preceding fig.

PLATE X. FISHES.

Fig. I. (From GEOFFROY, *Annales du Muséum*.) A vertical section of the *Gymnotus electricus*: a. the Swim-bladder; b. the Spine; c. c. Muscles; d. the anal Fin; e. the greater, and f. the smaller, electric organ.

Fig. II. (From HOME, *Phil. Trans.*) The abdomen of a Shark (*Squalus acanthias*) laid open: a. the Heart; b. the Liver, the left lobe of which has been removed; * the biliary duct; c. the Œsophagus; d. the upper part of the Stomach; e. the pyloric part; f. a dilatation between the Stomach and Duodenum; g. the Duodenum; h. the valvular Intestine; i. the hollow appendage to the Intestine; k. the Spleen; l. the Cloaca; m. the Penis; n. the Testicle; o. the seminal duct; p. a dilated portion of it; q. the Kidney; t. t. fissures leading to the abdomen; s. the graspers.

Fig. III. The Roe bag of the Pike, with immature ova, which are attached to the outer part of its parietes: a. the Swim-bladder; b. its ligaments; A. B. the Roe-bags, of which the right is cut away at d.*; d. the membranous part of the sac, still beset with ova; c. the Ova; f. the Kidney; g. the urinary bladder; h. the Rectum; i. the urinary and sexual opening; k. the anus.

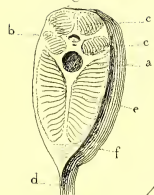
Fig. IV. The Heart of the Sturgeon, with the Ventricle, Auricle, and trunk of the Aorta laid open, (reduced more than one-half in size:) a. the Ventricle; b. fat, which almost completely surrounds the Heart; c. three mitral valves, which prevent the return of the blood into the Auricle; d. the Auricle; e. its cavity; f. tendinous fibres from the Heart to the Pericardium; g. the bulb of the Aorta; h. i. k. three rows of valves within it; * a probe passed from the Aorta into the Ventricle; ** and ***, two others introduced into the orifices of the venæ cavæ in the Auricle.

Fig. V. (From TIEDEMANN, *Anatomie des Fischherzens*.) The Heart and Aorta of the Pike: a. the Ventricle; b. the Auricle; c. the bulb of the Aorta; 1, 2, 3, 4, the branchial Arteries.

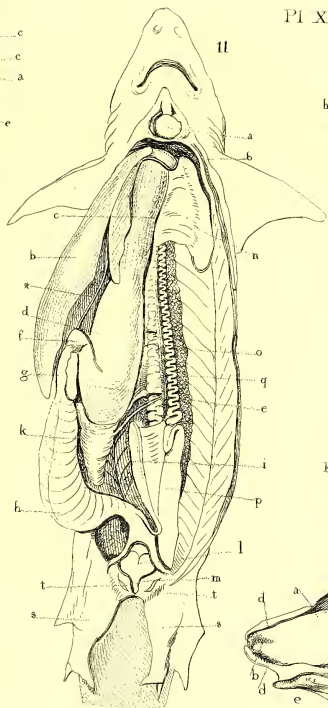
Fig. VI. (From the same.) a. the two valves of the orifice between the Auricle and Ventricle.

Fig. VII. (From the same.) a. the two valves at the bulb of the Aorta (b.)

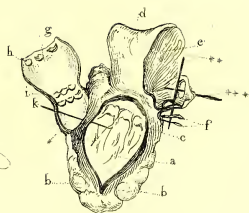
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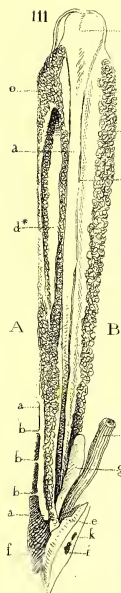
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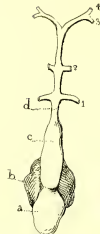
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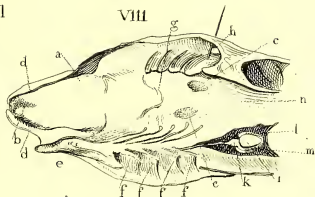
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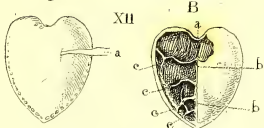
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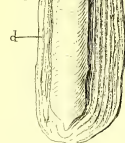
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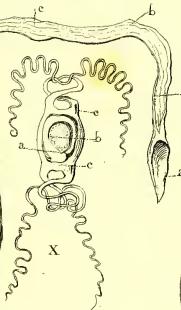
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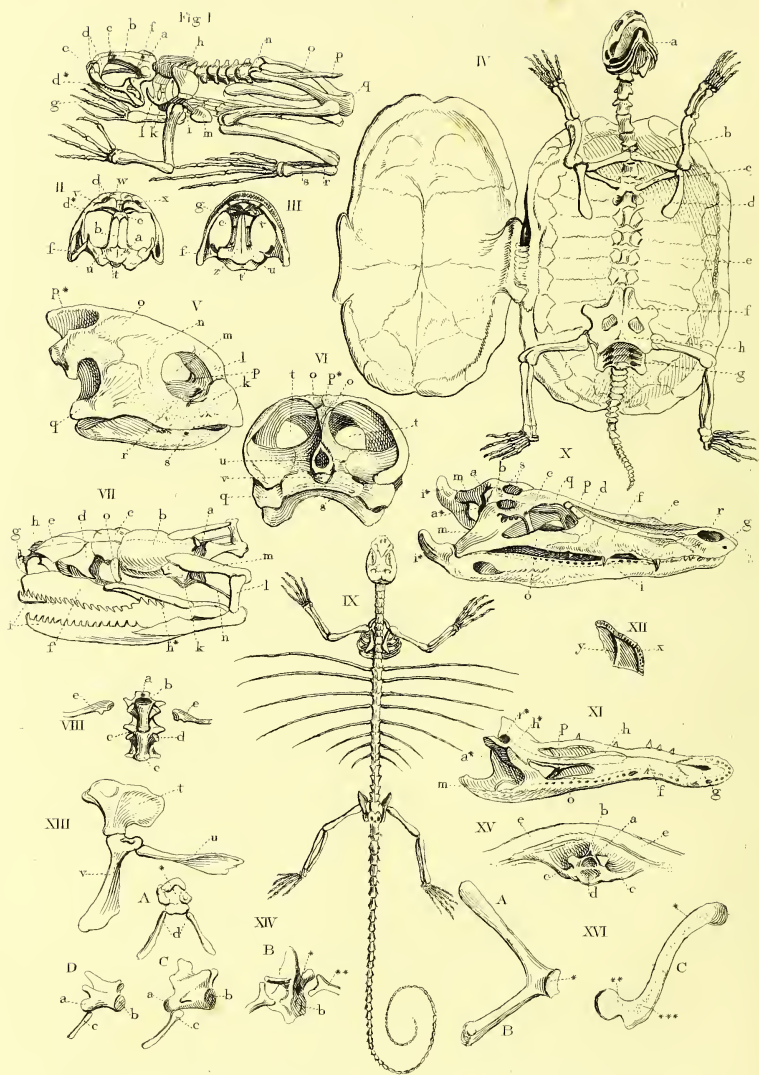


Fig. VIII. The Head of an Eel, viewed from below, the branchial arches and lower jaw being divided : a. the Palate ; b. the small anterior palatine teeth ; c. c. the pharyngeal teeth ; d. the inferior maxillary arch ; e. the Tongue ; f. f. f. the four branchial arches ; g. the situation of their moveable articulation with the cranium ; h. the branchial aperture, into which a probe is introduced ; i. the Heart ; k. the bulb of the Aorta ; l. the Auricle ; m. the Pericardium, which, by its juxtaposition with the Peritoneum, forms the septum inferiorly between the Heart and abdominal viscera.

Fig. IX. (From HOME, *Phil. Trans.*) The Oviduct of the *Squalus acanthias* : a. the orifice for the entrance of ova ; b. b. the first, c. c. the second, d. the third, portion of the duct ; e. the capsule, pointed at the extremities, and containing three ova.

Fig. X. (From the same.) Ovum of the *Squalus canicula* : a. the fœtus ; b. the yolk ; c. c. fissures in the Ovum, permitting the access of water to it.

Fig. XI. (From CAVOLINI, *on the Generation of Fishes and Crustacea.*) Ova of the *Syngnathus acus*, magnified 32 times : A. an Ovum, in the middle of which (a.) the developement of the fœtus commences upon the Yolk, (b.) the shell (c.) being turned aside. B. an Ovum, farther developed and laid open : a. the fœtus ; b. the yolk ; c. the shell ; d. the Heart. C. an ovum still farther developed : a. the fœtus ; b. the yolk ; c. the Heart ; e. the Spine ; f. the Aorta ; g. the descending, and h. the ascending, Vena Cava ; m. the point where the branch m. z. is given off from the Vena Cava, and forms the branch z. o. o. o. which empties itself into the Heart.

Fig. XII. (From CUVIER's *Anat. Comp.*) The Swim-bladder of the *Silurus felis*. A. entire, with its air-duct (a.) B. opened on one side : a. the fossa from which the air-duct arises ; b. longitudinal septum ; c. transverse septa.

PLATE XI. AMPHIBIA.

Fig. I. Skeleton of a Frog (*Rana temporaria*) : a. Parietal Bone ; b. Frontal Bone ; c. Ethmoid Bone ; d. superior Maxillary Bone ; d.* Zygoma ; e. Inter-

maxillary Bone ; f. Os Quadratum ; g. inferior Maxilla ; h. appendage to the Scapula ; i. Scapula ; k. Clavicle ; l. Furcula, or accessory Clavicle ; m. Niphoïd Cartilage ; n. Sacral Vertebra ; o. Ilium ; p. Coccyx ; q. Symphysis Pubis ; r. s. elongated and closely approximated bones, analogous to the Astragalus and Cs Calcis.

Fig. II. The Head of a Frog, viewed from above : a. b. c. d. d.* f. as in the preceding fig. : t. Occipital Bone ; u. Temporal Bone ; v. Palate Bone ; w. Intermaxillary Bone ; x. Nasal Bone.

Fig. III. The Head of a Frog viewed from below : z. Sphenoid Bone. The remaining references as before.

Fig. IV. (In part from MEYER, *Darstellung allerhand Thieren.*) The Skeleton of the Fresh-water Tortoise, seen from below, the abdominal shield being turned aside so as to expose its inner surface : a. Lingual Bone ; b. c. d. Bones of the Shoulder,—b. Clavicle, c. Scapula, d. accessory Clavicle ; e. the arched dorsal shield, composed of flattened strips of bone ; f. g. h. Bones of the Pelvis,—f. Os Pubis, g. Ilium, h. Ischium ; i. abdominal shield.

Fig. V. Head of a Green Turtle (*Testudo mydas*) : k. superior Maxilla ; l. Nasal Bones ; m. Orbits ; n. Frontal Bone ; o. parietal part of the external flattened roof of the Cranium ; p. Ethmoid Bone ; p.* crista of the Occipital Bone ; q. articular process for the reception of the lower Maxilla ; r. Zygoma ; s. lower Jaw.

Fig. VI. The same Head, viewed from behind ; t. the great temporal fossæ situated between the outer roof of the Cranium and the proper Cranium ; u. the Foramen magnum ; v. the articular Condyle. The remaining references as in the preceding fig.

Fig. VII. (From SPRIX, *Cephalogenesis.*) Head of the Boa *constrictor* : a. Occipital Bone ; b. Parietal Bones ; c. Frontal Bones ; d. Lachrymal Bone ; e. Nasal Bones ; f. superior Maxillary Bone ; g. Intermaxillary Bone ; h. anterior Palate Bone ; h.* posterior Palate Bone ; i. the separate rami of the inferior Maxillary Bone ; k. Temporal Bone ; l. m. Os Quadratum ; n. Columnella, corresponding to the Incus ; o. Zygomatic or Malar Bone.

Fig. VIII. (From HOME, *Lect. on Comp. Anat.*) Two dorsal Vertebrae of the Boa *constrictor* : a. spinal canal ; b. articular cavity at the upper extremity of the vertebra for the reception of the articular head (c.) at the lower extremity of the preceding one ; d. articular head at the side of the vertebra for the reception of the articular depressions on the heads of the Ribs. (e.)

Fig. IX. (From TIEDEMANN, *Anatomie des Fliegenden Drachen*.) Skeleton of the Flying Lizard. (*Draco viridis*.)

Fig. X. Head of a Crocodile (*Crocodilus niloticus*.) a.* articular Condyle on the Occiput; i.* posterior hooked process of the inferior Maxilla; m. articular process for the reception of the inferior Maxilla; p. Lachrymal Bone; q. Ethmoid Bone; r. aperture of the nares; s. upper openings of the temporal fossæ. The remaining references as in fig. VII.

Fig. XI. The same Head without the lower Jaw, and viewed rather from below; r.* the posterior opening of the nasal canal. The remaining references as in Fig. X. and VII.

Fig. XII. A portion of the arch of the Cranium of an Iguana (*Lacerta iguana*): y. the inner surface; x. the very evident Diploë between the inner and outer tables.

Fig. XIII. (From CUVIER, *Annales du Muséum*.) Bones of the Pelvis in a Crocodile; t. Ilium; u. Os Pubis; v. Ischium.

Fig. XIV. (From the same.) Vertebræ of a Crocodile. A. The Atlas; * spinal canal; d. transverse processes. B. A dorsal vertebra; b. articular cavity at the upper end of the body; * spinal canal; ** Ribs. C. D. caudal vertebra; a. articular head at the lower, and b. articular cavity at the upper, end of the body of the vertebra; c. inferior spinous process.

Fig. XV. The first dorsal vertebra of the Freshwater Tortoise, viewed from the end next the head: a. spinal canal; b. spinous process; c. transverse processes to the dorsal shield, (e.) leaving a cavity on each side of the spinous process perfectly similar to the temporal fossæ of the Cranium in Fig. VI.; d. the body of the vertebra.

Fig. XVI. A. B. Bones of the Shoulder in the Fresh-water Tortoise. A. The Clavicle; B. the Scapula. (It will be seen how evidently these bones of the Shoulder resemble the belt of pelvic bones in other animals, *e. g.* the Frog, Fig. I. and the belt supporting the pectoral Fins of cartilaginous Fishes. Pl. VIII. Fig. IX.) * articular cavity for the Humerus. C. the Humerus divided longitudinally, in order to show that there is not any medullary cavity. Its texture is extremely hard and solid, being merely somewhat porous at * and ***, but still not cellular; * * the Head of the Humerus.

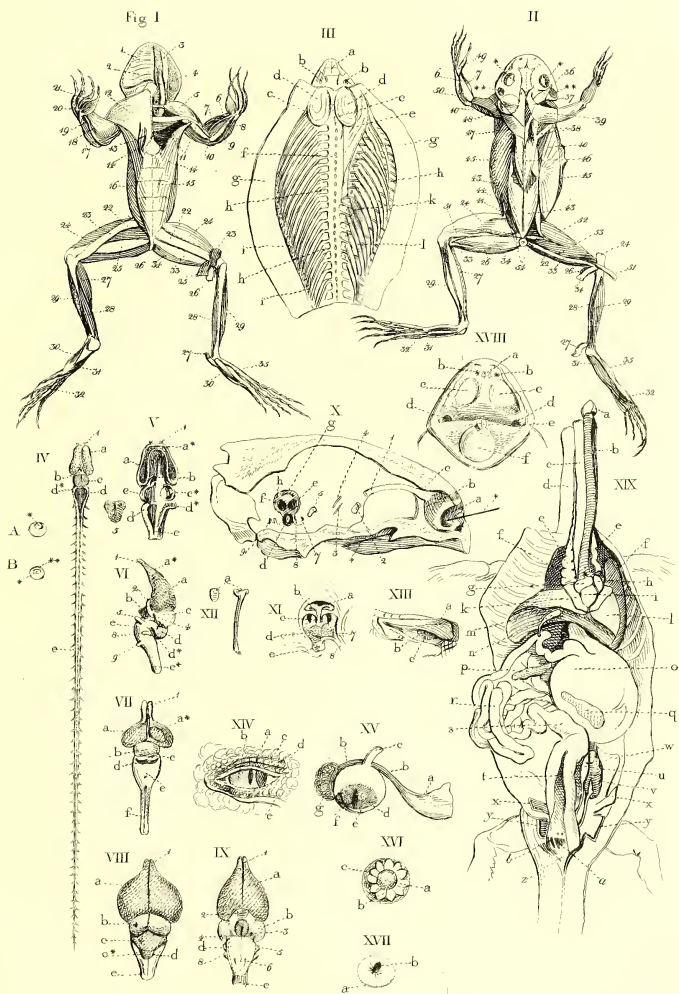
PLATE XII. AMPHIBIA.

Fig. I. A view of the muscles on the anterior part of a male Frog. Several muscles of the left side are removed. 1, Mylohyoideus; 2, Hyoglossus; 3, Geniohyoideus; 4, Sternohyoideus; 5, Deltoideus; 6, Extensor digitorum; 7, Supinator; 8, Flexor digitorum sublimis; 9, Flexor carpi radialis; 10, Anconeus; 11, Pectoralis minor, or Sterno-radialis, as it runs direct from the Sternum over a pulley to the Radius; 12, Pectoralis major; 13, a cutaneous muscle; 14, abdominal portion of the great pectoral muscle; 15, Rectus abdominis; 16, Obliquus descendens; 17, Pronator; 18, Flexor carpiradialis; 19, Flexor digitorum sublimis; 20, muscles of the Thumb, (Flexor brevis, Opponens, Adductor pollicis); 21, Interossei; 22, Pectineus; 23, Sartorius; 24, Extensor cruris, (Vasti and Rectus femoris); 25, Adductor magnus; 26, Gracilis; 27, Gastrocnemii; 28, Soleus; 29, Flexor pedis (Tibialis anticus); 30, Abductor pollicis; 31, Flexor digitorum pedis; 32, Interossei; 33, Semitendinosus; 34, Semimembranosus; 35, Extensor digitorum pedis.

Fig. II. Muscles on the posterior surface of a female Frog, several being removed on the left side. 36, Temporalis; 37, Levator scapulæ; 38, Depressores scapulæ; 39, Scapularis; 40, Obliquus ascendens; 41, Quadratus lumborum; 42, Glutæus; 43, Ischiococcygeus; 44, Cutaneous muscle; 45, Obliquus descendens; 46, Sacro lumbalis; 47, Latissimus dorsi; 48, Depressor maxillæ inferioris, being inserted into the process behind the articulation of the lower jaw; 49, Abductor Pollicis; 50, Extensor carpi ulnaris; 51, Biceps femoris; 52, Iliacus internus, (apparently supplying the place of the Cruralis); 53, Adductor longus; 54, Pyriformis; * the Eyes; Membrana Tympani. The remaining references as in the preceding Fig. It will be seen how materially the two Sexes differ in general form and in the condition of the muscular system, the thoracic region and the muscles of the anterior extremities being much stronger in the male than in the female.

Fig. III. (From HOME, *Lect. on Comp. Anat.*) The muscles of the Ribs in the Cobra de Capello, viewed from the back. a. the Scales of the head; b. the Eyes; c. muscles of the poison-gland (d.); e. f. Occipital muscles; g. the Skin

Fig 1





reflected; h. the Intercostal muscles; i. muscles, which draw the skin forward so as to form the hood; they arise from the Ribs, and are inserted into the skin; k. l. elevator muscles of the Ribs, attached to the Ribs alone.

Fig. IV. Brain and Spinal Marrow of the *Salamandra terrestris*, viewed from the back. 1, the Olfactory Nerves; a. their Ganglia or Hemispheres of the Brain; b. Ganglia of the Hemispheres (Thalami); c. Optic Tubercles; d. cavity of the Medulla oblongata, or Fourth Ventricle; d.* a little transverse band at its anterior extremity, forming the Cerebellum. As far as (e.) the spinal cord is lodged in the dorsal, and afterwards in the caudal, vertebræ. A. a transverse section of the spinal cord immediately below the fourth Ventricle; * the canal within it, still of considerable extent. B. a transverse section made farther down; * the canal of the spinal cord; ** the superior fissure.

Fig. V. The Brain of a Frog expanded and viewed from above. 1, the Olfactory Nerves; a. the Hollow Hemispheres laid open; a.* the union of the two Hemispheres; b. the anterior Commissure; c. the left Optic Tubercle; c.* the right one laid open, together with the Ganglion within it; d. the Cerebellum; d.* the right half of it reflected; e. the Medulla oblongata. Fig. 5. The heart-shaped Choroid Plexus of the Fourth Ventricle.

Fig. VI. A lateral view of the Brain of a young Green Turtle. (*Testudo mydas*.) 1, Olfactory Nerve; a. Hemisphere; a.* anterior lobe; b. grey substance around the Infundibulum; c. Optic Tubercle; 2, Optic Nerve; d. Cerebellum; d.* posterior transverse fold of it; e. inferior protuberance of the Medulla oblongata; e.* the Spinal Marrow; 3, Nerve of the third Pair (Motor Oculi); 4, Nerve of the fourth Pair (Trochlearis); 5, Nerve of the fifth Pair (Maxillary); 8, Auditory Nerve; 9, Vagus Nerve.

Fig. VII. Brain of the *Coluber natrix*, viewed from above. 1, Olfactory Nerves; a. the left Hemisphere; a.* the right, laid open so as to expose the Corpus striatum; b. the Optic Tubercles; c. little transverse band of medullary matter, supplying the place of the Cerebellum; d. the fourth Ventricle; e. the Medulla oblongata; f. the Spinal Marrow.

Fig. VIII. Brain of a young Crocodile viewed from above: 1, Olfactory Nerves; a. Hemispheres; b. Optic Tubercles; c. Cerebellum, in which the lateral lobules (Flocken,) are very evident; c.* posterior transverse lobe of the Cerebellum; d. Medulla oblongata; e. Spinal Marrow.

Fig. IX. Brain of an Iguana (*Lacerta iguana*), viewed from below. 1,

Olfactory Nerves ; a. Hemispheres ; b. Optic Tubercles ; 2, the decussation of the Optic Nerves cut through so as to expose the alternating laminae within it ; 3, the Nerve of the third Pair ; 4, the Nerve of the fourth Pair ; 5, the Nerve of the fifth Pair ; 6, the Sixth Pair ; 8, the Auditory Nerve ; d. the Medulla oblongata ; e. the Spinal Marrow.

Fig. X. (From SCARPA, *de Auditu et Olfactu.*) A vertical longitudinal section of a Cranium of a Green Turtle. (The nasal septum is removed.) a. the opening of the nares ; * a probe introduced into the opening in the palate ; b. ramifications of the Olfactory Nerve on the nasal concha ; c. the point where the branches to the septum have been removed ; 1, the Olfactory Nerve ; 2, the Optic Nerve ; 3, the Motor Oculi ; 4, the Trochlearis ; 5, the Nerve of the fifth Pair ; 7, foramen for the Facial Nerve ; 8, hollow for the Auditory Nerve ; 9, Nervus Vagus ; d. the base of the Columella appearing in the Fenestra ovalis of the Vestibule ; e. the greater, f. the smaller, fissa of the Labyrinth ; g. the course of the anterior, and h. of the posterior semicircular canal.

Fig. XI. (From the same.) The soft Labyrinth of the same Head. a. anterior, b. posterior, c. horizontal, semicircular canal ; d. the Ampulla ; e. sac of the Labyrinth ; 7, Facial Nerve ; 8, Auditory Nerve.

Fig. XII. (From the same.) The Columella of the Ear of the Crocodile : a. its base.

Fig. XIII. The external Ear of the left side in a young Crocodile. The outer and upper fold (a.) is raised in order to display the membrana Tympani (b.) and the point of the Columella (s.) imbedded in it.

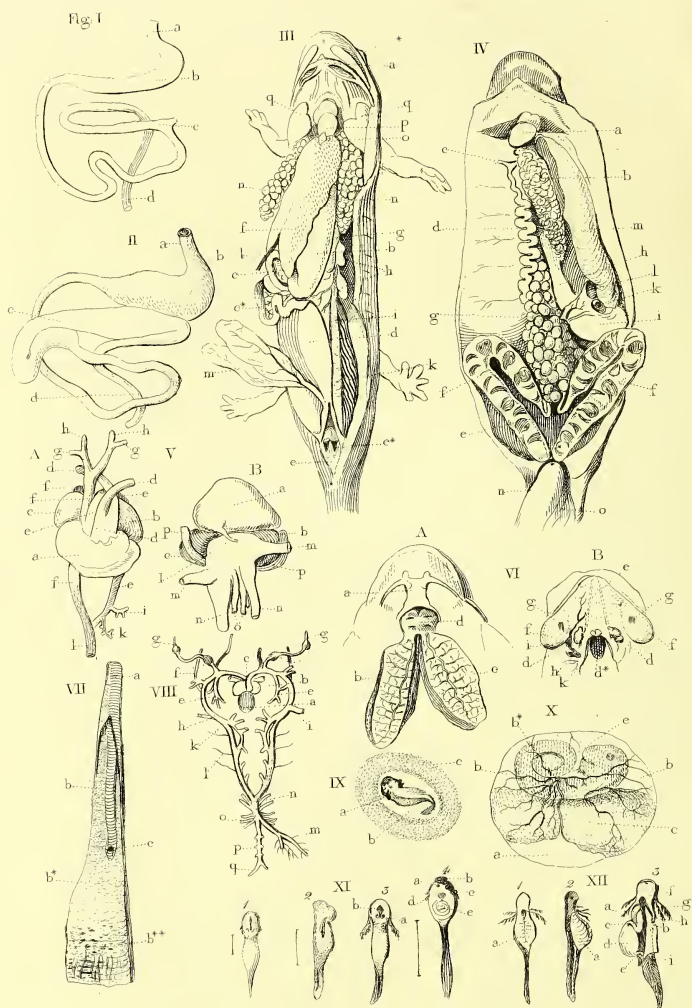
Fig. XIV. The left Eye of the same animal : a. the Pupil appearing through the membrana nictitans (b.) ; c. the iris ; d. the upper, e. the lower, Eyelid.

Fig. XV. The Eye itself exposed : a. the Membrana nictitans ; b. its Tensor muscle ; c. the Optic Nerve ; d. the Iris ; e. the Cornea ; f. the Pupil ; g. the Lachrymal gland.

Fig. XVI. The anterior segment of the Eye of the Iguana : a. the Cornea ; b. the circle of bony scales ; c. the Sclerotica.

Fig. XVII. The Retina of the Iguana : a. the Retina ; b. a process extending from the entrance of the Optic Nerve to the Lens, and resembling the Pecten in the Eye of Birds.

Fig. XVIII. The expanded mouth of a Frog : a. little palatine Teeth ; b. internal apertures of the nares ; c. protuberances formed by the Eyes ; d. the large



orifices of the Eustachian Tubes ; e. the Glottis ; f. the Tongue, tied down in front, divided, and forming a loose projection posteriorly in the manner of an Epiglottis.

Fig. XIX. A young Crocodile, 14 inches long, laid open in front : a. the Larynx ; b. the Trachea ; c. the Œsophagus ; d. the cervical muscles ; e. glandular masses extending upwards on each side of the neck ; f. the Lungs ; g. the right, and h. the left, Auricle of the Heart, i. ; k. the Pericardium ; l. the left, and m. the right, lobe of the Liver ; n. the Gall-bladder ; o. the Stomach ; p. the Pancreas ; q. the Spleen ; r. the small Intestine ; s. the Colon ; t. the Rectum laid open ; u. the Testicle ; v. the Kidney of the left side, exposed by the reflection of the Peritoneum, w. ; x. the Os Pubis ; y. the Ischium ; z. the Cloaca ; a. projecting fold at the termination of the Rectum ; b. the Penis.

PLATE XIII. AMPHIBIA.

Fig. I. (From HOME, *Lect. on Comp. Anat.*) Intestinal canal of the Turtle of the Musquito coast : a. the Œsophagus ; b. the Stomach ; c. the commencement of the Colon ; d. the Rectum.

Fig. II. (From the same.) Intestinal canal of the Land Tortoise : a. b. c. d. as in the preceding fig.

Fig. III. A male Salamander (*Lacerta salamandra*) opened on the abdominal side : a. Os Hyoides ; * the Eye ; b. the Stomach ; c. the Pancreas ; c.* the small Intestine ; d. the Colon ; e. the Cloaca ; e.* two triangular projections forming rudiments of Penes ; f. the Liver ; g. the Spleen ; h. the Testicles ; i. the Kidney ; l. a Vein which conveys the blood of the abdominal parietes and of the bladder to the Liver ; m. the Bladder, with two Cornua ; n. the pulmonary sacs ; o. the cartilage over the Pericardium ; p. the Heart ; q. the Scapulæ.

Fig. IV. A pregnant female of the same species, with the abdomen laid open, the Liver, Stomach, and Lungs being turned to the left side, and the Intestines removed : a. the Heart ; b. the right lung ; c. the orifice of the right Oviduct ; d. its convolutions upon the spine ; e. the termination of the Oviduct in the receptacle (f.) ; g. the Ovary ; h. i. the Stomach ; k. the extremity of the Intestine

cut away; l. the Gall-bladder; m. the Liver; n. the Rectum reflected; o. the bladder reflected.

Fig. V. (From MERY, *Mém. de l'Acad. des Sciences*.) The Heart of the Hawk's-bill Turtle (*Testudo imbricata*.) A. In its natural position, with the Arteries arising from it: a. the Ventricle, with several communicating cells; b. the left, and c. the right, Auricle; d. the Pulmonary Artery; e. the connecting branch, or left Aorta; f. the right Aorta; g. the Axillary Artery; h. the Carotid; i. the Coeliac, k. the Mesenteric, l. the descending Aorta. B. the Heart turned upwards, in order to shew the veins entering it: a. the Ventricle; b. the left, c. the right, Auricle; l. the Coronary Vein; m. the Axillary Vein; n. the Venæ Cavæ; o. the Hepatic Veins; p. p. the Pulmonary Veins.

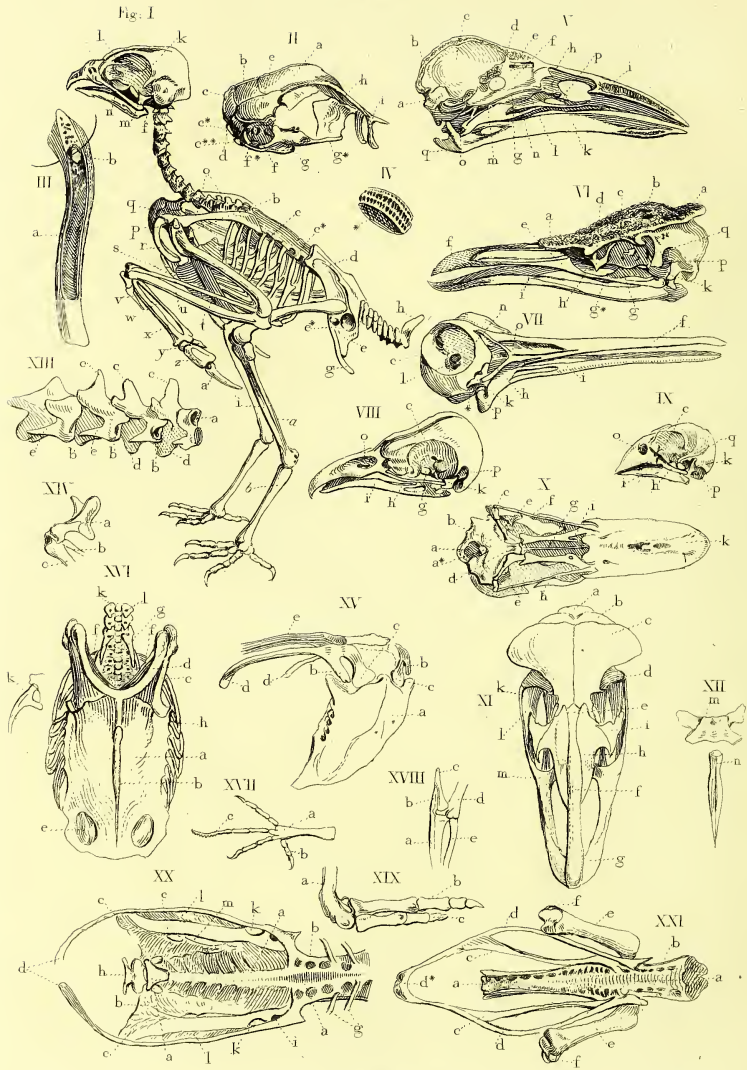
Fig. VI. Respiratory organs of the *Rana esculenta*. A. Laryngeal region, with the Lungs laid open: a. the Os Hyoides; b. the right, c. the left, Lung; d. the Larynx, with the vocal ligaments. B. The Laryngeal region, with the laryngeal pouches: d. the Thyroid Glands; d.* the Glottis seen from below, the Larynx being laid open; e. Genio-hyoideus; f. the laryngeal pouch; g. the hole, shining through it, by which it communicates with the cavity of the mouth; h. the Carotid; i. a grey swelling on its external branch; k. the brachial Nerve.

Fig. VII. The upper part of the Lung of the *Coluber thuringicus*: a. the Trachea; b. the membranous part of the Lung; e. the blind depression at the extremity of the Trachea where it enters the Lung, forming a rudiment of a left lung; b.* the close reticular structure at the upper, and b.** the looser reticular structure at the middle, part of the Lung, forming a transition to the vesicular structure.

Fig. VIII. (From SWAMMERDAM.) Arterial circulation of the Frog: a. the Ventricle; b. the Auricle, with the Venæ Cavæ; c. the division of the two Aortæ; e. the Pulmonary Arteries; f. the ascending branch to the parts about the mouth; g. the Carotid with two tubercles, probably corresponding to the former origin of the Branchial Arteries; h. descending lateral Aorta; i. the Axillary Artery; k. Gastric, l. spinal, m. Mesenteric, n. Lumbar, o. Spermatic or Ovarial, p. Renal, q. Iliac, Artery.

Fig. IX. The Larva of a Frog within the Ovum (magnified): a. the Larva; b. the Chorion; c. albuminous mass around it.

Fig. X. (From EMMERT in REIL's *Archiv.*) The incubated Ovum of a Lizard: a. albuminous mass; b. Allantois (called Chorion by EMMERT); b.* the



trunk of the vessels of that membrane, proceeding from the Umbilicus ; c. the Vitellum (yolk) visible behind the Allantois ; e. the Amnion with the fœtus.

Fig. XI. The state of developement of the Larva of the Frog at three different periods, (the lines indicating the natural size.) 1, Immediately after escaping from the Ovum ; 2 and 3, two days later ; a. little sucking papillæ about the orifice of the mouth (b.) 4. At a farther interval of seven days, when the size of the branchiæ is already considerably reduced : a. little sucking tube ; b. the mouth ; c. the respiratory tube ; d. rudiment of the Branchiæ ; e. the spiral translucent convolutions of the Intestinal Canal.

Fig. XII. Larvæ of the Salamander. 1 and 2, taken from an Ovum as lodged in the receptacle in fig. IV. : a. the Yolk-bag on the abdomen, its veins emptying themselves into the Liver. 3, a Larva more advanced by six days, and laid open : a. the Liver ; b. the Stomach ; c. the upper part of the Intestine ; d. the Yolk Bag, which appears as a part of the Intestinal Canal ; e. the lower part of the Intestine ; f. the Heart ; g. the Branchiæ ; h. anterior, and i. posterior, extremities.

PLATE XIV. BIRDS.

Fig. I. Skeleton of a Falcon (*Falco nisus*.) f. cavity of the Tympanum : k. Orbit ; l. superciliary process and bone ; m. Os quadratum ; n. Zygoma ; o. Scapulæ ; p. Os humero-capsulare ; q. head of the Clavicle of the right side, that of the left being concealed by the Humerus ; r. Furcula ; s. Sternum ; t. Radius ; u. Ulna ; v. the Thumb ; w. the metacarpal bone of the little, and x. of the great, finger of the Wing ; y. the little Finger ; z. the first, and a. the second, phalanx of the great finger ; b. aperture for the admission of air into the Humerus ; c. the upper, and c.* the lower, iliac processes of the dorsal Vertebrae ; d. the Ilium ; e. the Ischium ; e.* the Ischiatic foramen ; g. the Os Pubis ; h. the last caudal vertebra ; i. Tibia ; a. Fibula ; b. Tarsus and Metatarsus.

Fig. II. Cranium of a young Fowl : a. the Frontal Bone ; b. the Parietal,

c. occipital portion, c.* condyloid portions, and c.** basilar portion, of the Occipital Bone; d. Occipital Foramen; e. the Temporal Bone; f. cavity of the Tympanum; f.* Fenestra ovalis; g. Sphenoid Bone; g.* its pointed extremity h. the Ethmoid Bone; i. the Nasal Bone.

Fig. III. The upper part of the Humerus of a Falcon divided longitudinally: a. the great cavity for the reception of air which enters through the foramen, b.

Fig. IV. A portion of the Cranium of an Owl, divided transversely in order to shew the three rows of air-cells; * the inner table.

Fig. V. A vertical longitudinal section of the head of a Crow (*Corvus corone*): a. Occipital Foramen; b. posterior fossa of the Cranium, for the reception of the Cerebellum; c. the greater fossa for the reception of the Hemispheres of the Brain; d. the Optic Foramen; e. Foramen for the passage of the Olfactory Nerves, and semi-canal in the Ethmoid Bone, f.; g. the Sphenoid Bone; h. the place where the upper portion of the Bill has a moveable connection with the Frontal and Ethmoid Bones by means of the Nasal Bone and the nasal processes of the Intermaxillary Bones; i. the air-cells of the upper portion of the Bill; k. the lower jaw; l. the anterior Palate Bone; m. the posterior (Os omoideum); n. the Zygoma; o. the Os quadratum; p. the superior Maxillary Bone; q. the posterior process of the lower Jaw.

Fig. VI. The Head of the Cassowary: a. a. the rough surface of the Cranium, to which the horn is attached; b. two apertures for the introduction of air into the cells of the horn; c. the Orbit; d. the Lachrymal Bone; e. the superior Maxillary Bone; f. the Intermaxillary Bone; g. the Palate Bone; g.* the situation where it is connected with the Zygoma; h. the Zygoma; i. the Lower Jaw; k. the Os quadratum; p. the Tympanum; q. the Zygomatic process.

Fig. VII. The Head of a Woodcock. (*Scolopax rusticola*.) l. the Optic Foramen; m. the Olfactory Foramen; n. the second Zygoma, formed by the Lachrymal Bone and Zygomatic process; o. the nasal Foramen; * the situation of the occipital Foramen. The remaining references as in the preceding Fig.

Fig. VIII. The Head of an Owl. (*Strix ulula*.) The references as in the two preceding Figures.

Fig. IX. The Head of a Hawfinch. (*Loxia coccythraustes*.) The references as before.

Fig. X. Head of the Anus *clangula*, viewed from below, without the lower Jaw: a. the occipital Foramen; a.* the articular condyle; b. the Sphenoid Bone;

c. the Os quadratum ; d. the orifice of the Eustachian tube ; e. the posterior Palate Bones, (Ossa omoidea) ; f. the Zygoma ; g. the Vomer ; h. the Lachrymal Bone ; i. k. the anterior Palate Bones, superior Maxillary, and Intermaxillary Bones.

Fig. XI. Head of a full-grown Ostrich viewed from above: a. the Occipital Bone ; b. the Parietal Bone ; c. the Frontal Bone, still divided by a very evident suture ; d. the Os quadratum ; e. the connection of the nasal process (f.) of the Intermaxillary Bone with the Ethmoid ; g. lateral portions of the Intermaxillary Bone ; h. Nasal Bone ; i. Lachrymal Bone ; k. Zygoma ; l. the lower Jaw ; o. the Palate Bone ; m. the Superior Maxillary Bone.

Fig. XII. (From GEOFFROY, *Annales du Muséum.*) Sphenoid Bone of a young Ostrich : m. the posterior, n. the anterior, portion.

Fig. XIII. The five upper cervical vertebræ of a Vulture. (*Vultur griseus.*) a. the spinal canal ; b. the holes in the transverse processes, which form the lateral vertebral canal ; c. the upper spinous processes ; d. the lower ; e. the styloid processes on the transverse processes, forming, as it were, short Ribs.

Fig. XIV. Bones of the Wing in the Swift (*Hirundo apus.*) a. the Humerus ; b. the Radius ; c. the Ulna.

Fig. XV. Bones of the Sternum and Shoulder in the Ostrich : a. the Sternum ; b. the accessory Clavicle, placed externally, and forming a rudiment of the Furcula ; c. the Clavicle ; d. the Scapula : (all these three form but one bone ;) e. the Humerus.

Fig. XVI. Bones of the Breast in the Vulture *cinereus*: a. the Sternum ; b. its Crista ; c. the Clavicle ; d. the Furcular Bone ; e. openings in the Sternum, occupied by ligamentous membranes ; f. a similar membrane in the furcular bone ; g. anterior short Ribs ; h. articulation between the sternal and vertebral portions of the Ribs ; i. lateral vertebral canal ; k. bodies of the vertebræ ; k. (in the side figure,) the mode of attachment of the true Ribs to the Spine:

Fig. XVII. (From NITZSCH, *Osteographische Beyträge.*) Foot of the Goat-sucker. (*Caprimulgus europæus.*) a. Metatarsus ; b. Thumb ; c. the longest Toe, with its remarkable claw.

Fig. XVIII. The Patella of the Podiceps *auritus* : a. the Tibia ; b. the Process belonging to it ; c. the Patella ; d. the Femur ; e. the Fibula.

Fig. XIX. The right Foot of the Ostrich ; a. the Metatarsus ; b. the great Toe ; c. the small one.

Fig. XX. The Bones of the Pelvis of a Duck, (*Anus boschas*), viewed from within and below: a. Sacrum; b. Ilium; c. Ischium; d. Os Pubis; g. the posterior Ribs; h. the caudal vertebrae; i. the hole in the Acetabulum; k. the Obturator Foramen; l. the continuation of that Foramen closed by its membrane; m. the Ischiatic Foramen.

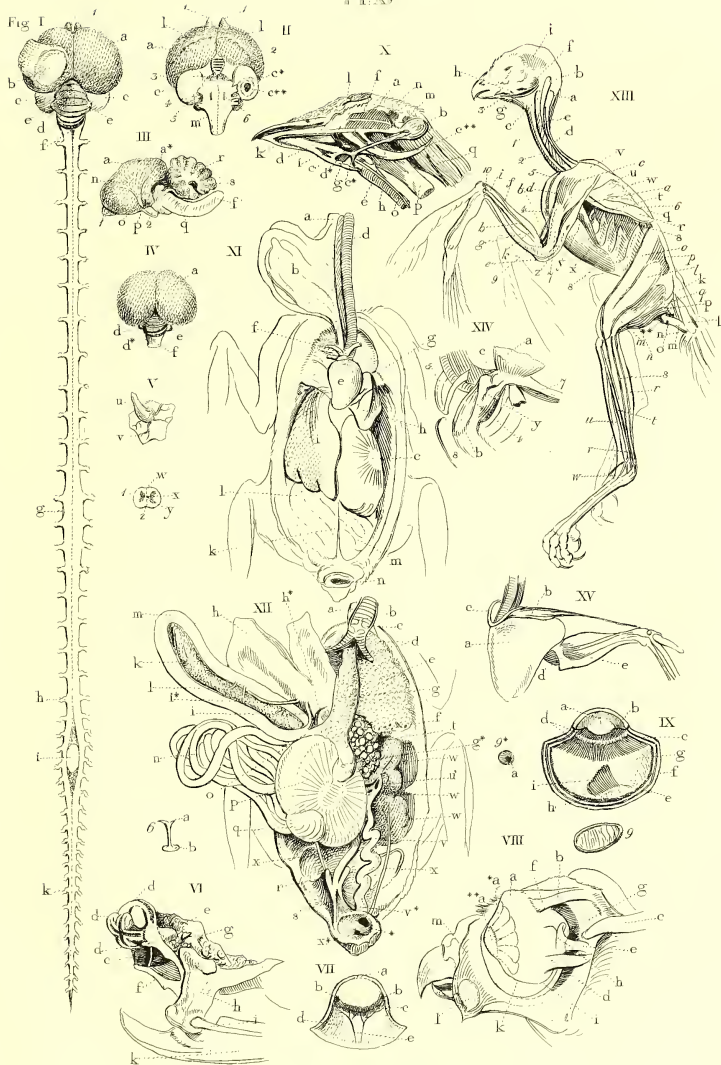
Fig. XXI. (From BLUMENBACH, *Handbuch der Vergleich. Anat.*) The Pelvis of an Ostrich: d.* the arch of the Pubes; e. the Femur; f. a peculiar pulley for the Fibula at the outer side of the lower articular head of the Femur. The remaining references as in the preceding Fig.

PLATE XV. BIRDS.

Fig. I. Brain and Spinal Marrow of a Dove, viewed from above: a. the Hemispheres, of which the left is laid open in order to display the great swelling within it, corresponding to the Corpus striatum of the human brain: 1, the swelling at the root of the Olfactory Nerves; c. the Optic Tubercles, (anterior pair of the Corpora quadrigemina); d. the Cerebellum; e. e. its lateral lobules (Flocken); f. the Medulla oblongata; f.—g. the cervical, g.—h. the dorsal, h.—k. the sacral, and from k. the caudal, portions of the Spinal Marrow; i. the Groove and Sinus rhomboidalis in the sacral portion. Fig. 1, a transverse section of the Spinal Marrow at its middle enlargement; w. the superior groove; x. the canal; y. grey substance; z. the lower groove.

Fig. II. The same Brain viewed from below: 1, a. c. as before. A portion of the right Optic Tubercle is removed, in order to show its cavity (c.***) and its grey substance (c.*); 2, a transverse section of the decussation of the Optic Nerves, shewing the alternation of grey and medullary substance; l. medullary striæ at the basis of the Hemispheres; m. the broad protuberance of the Medulla oblongata; 3, the third Pair of Nerves; 4, the fourth; 5, the Fifth (Maxillary); 6, the sixth (Abductor.)

Fig. III. A vertical longitudinal section of the same Brain: 1, a. 2, f. as before; n. the radiated Septum; o. the little medullary pillar belonging to it; p.



the Anterior Commissure ; a.* the Ganglion of the Hemisphere, (Thalamus Nervi Optici) ; q. Commissure of the Optic Tubercles, (roof of the Aqueduct) ; r. ramification of the medullary substance of the Cerebellum ; s. its cavity.

Fig. IV. Brain of a Chaffinch (*Fringilla cælebs*), viewed from above : a. the Hemispheres ; d. the Cerebellum ; d.* an inferior lobe of the Cerebellum connected with the lateral lobule (e.) ; f. the Medulla oblongata.

Fig. V. Pineal Gland of a Turkey, attached to the Dura Mater, with its vessels : u. the Gland ; v. the Dura Mater.

Fig. VI. The Organ of Hearing of the right side in the Turkey : c. the cavity of the Tympanum with the Columella ; d. d. d. the three Semicircular Canals laid open ; e. the rudiment of a Cochlea ; f. the Membrana Tympani ; g. bony cells surrounding the internal organ of Hearing ; h. the Os quadratum ; i. the Zygoma ; k. the lower Jaw. Fig. 6. The Columella magnified : a. the extremity attached to the Membrana Tympani ; the plate lodged in the Fenestra Vestibuli.

Fig. VII. A transverse section of the Cornea and bony circle around the Eye of an Owl (*Strix bubo*.) a. the Cornea ; b. CRAMPTON'S circular muscle of the Cornea, which is attached to its innermost layer ; c. a circular Artery running upon it ; d. the inner surface of the half of the bony circle ; e. Nerves to the circular muscle.

Fig. VIII. Shows the position and muscles of the Eye in a Falcon, (*Falco lagopus*) : a. the Sclerotica forming the ball of the Eye ; a.* the bony circle ; a.** the Cornea ; b. the superior Oblique Muscle ; c. the Rectus Superior, reflected ; d. the Rectus Externus ; e. the Optic Nerve ; f. the quadrangular tensor Muscle, and g. the proper pyramidal Muscle, of the Tendon (h. i.) of the Membrana nictitans (k.) ; l. the plate of cartilage in the lower Eyelid (m.)

Fig. IX. A vertical section of the same Eye : a. the Cornea ; b. the Iris, or rather Uvea ; c. the bony circle ; d. the Ciliary body ; e. the Sclerotica ; f. the Choroid ; g. the Retina ; h. the entrance of the Optic Nerve ; i. the Pecten.

Fig. 9. A transverse section (somewhat magnified) of the Optic Nerve of the same Eye immediately before its entrance into it, evidently displaying its laminated structure, which is the cause of the formation of the Pecten. Fig. 9.* Shows the anterior part of the Eye in a Chick of six days, with the fissure in the Choroid at the lower margin of the Pupil. (a.)

Fig. X. The muscles of the Os Hyoides in a Turkey : a. the Masseter ; b. the Depressor of the lower Jaw, attached to its posterior hook-shaped process ;

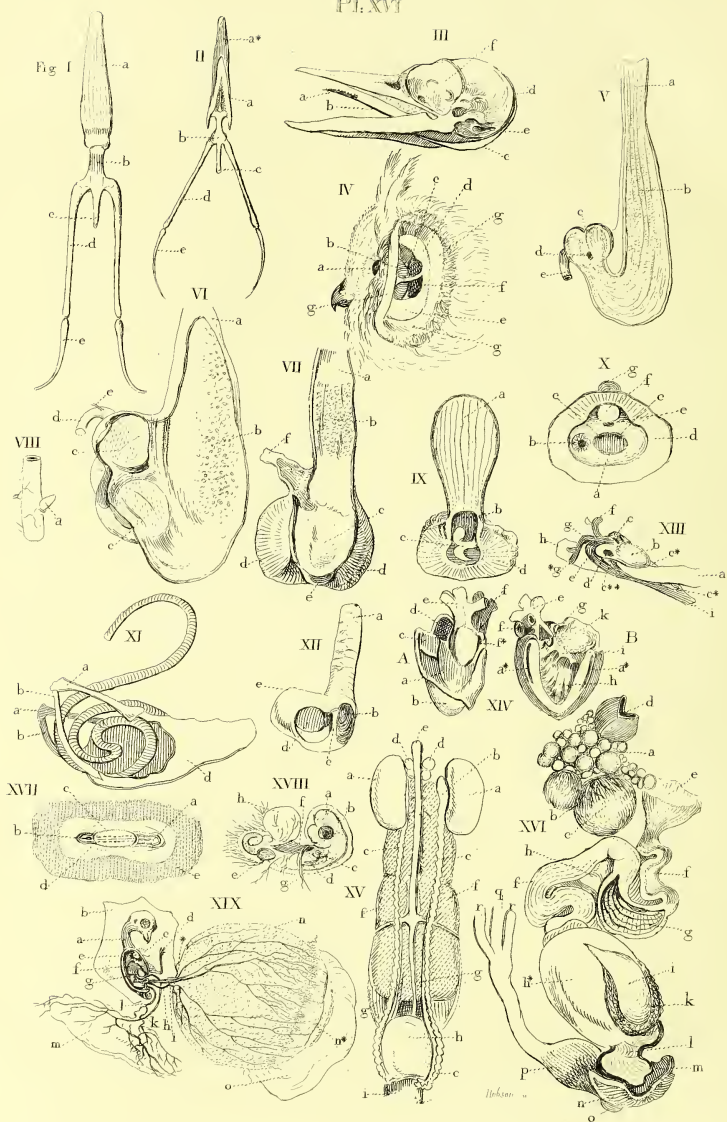
c. the body of the Os Hyoides, with its point turned forwards, and supporting the Tongue; c.* its posterior process; c.** its Cornu; d. the anterior greater, d.* the posterior smaller, salivary gland; e. Serpi hyoideus; f. conical muscle of the Os Hyoides; g. Cerato-hyoideus; h. Sterno-laryngeus; i. Cerato-glossus; k. the edge of the Mylo hyoideus, which has been removed; l. the Eye; m. the Ear; n. Ligamentum maxillæ; o. Trachea; p. Œsophagus; q. cervical muscles.

Fig. XI. Trunk and Neck of a Pigeon open in front, in order to show the Viscera in their natural position: a. the Œsophagus; b. the Crop; c. the Gizzard; d. Trachea; e. the Heart; f. the three branches of the Aorta; g. the Pericardium; h. the left, i. the right, lobe of the Liver; k. a kind of suspensory ligament, by means of which the air-cells belonging to the Stomach are separated from those belonging to the right lobe of the Liver; l. m. the Intestines enclosed within a peculiar cell; n. the orifice of the Cloaca.

Fig. XII. Trunk of the same animal. The Heart is removed, the Liver reflected, the Stomach and Intestines drawn to one side: a. the continuation of the Œsophagus below the Crop; b. the inferior Larynx; c. its muscles; d. Bronchi; e. the Lungs; f. apertures, by means of which the air passes from them into the cells of the Abdomen; g. the glandular cardiac portion of the Stomach; g.* the passage from it into the Gizzard; h. the under surface of the Liver; h.* the Spleen; i. i.* the Biliary Ducts; k. the Pancreas; l. the pancreatic Ducts; m. the Duodenum; n. the small Intestine; o. the Pylorus; p. the tendinous fibres of the digastric muscles of the Gizzard; q. the thinner muscular part of its coats; r. Cæca on the Rectum (s.); t. the Ovary; u. the superior orifice of the Oviduct (v.); v.* its entrance into the Cloaca; w. w. Kidnies; x. Ureters; x.* opening of the Bursa Fabricii into the Cloaca (*.)

Fig. XIII. Muscles of the *Falco nisus*: a. Biventer cervicis; b. Trachelo-occipitalis; c. Trachelo-mastoideus; d. Cervicalis descendens; e. Longus colli; f. Serpi-mastoideus (Fig. X. b.); g. Mylo-hyoideus; h. Conicus Ossis Hyoidei (Fig. X. f.); i. Temporalis; k. Levator coccygis; l. Lateralis coccygis posterior; m. Depressor coccygis; n. o. Lateralis coccygis anterior; p. Femoro-coccygeus; ** Os Pubis; q. Multifidus spinæ; r. Levator costæ; s. Serratus anticus major; t. Costo-scapularis; u. u. Latissimus dorsi; v. Trapezius; w. Rhomboideus; x. Pectoralis major; y. Pectoralis minor; z. Humero-scapularis; a. Teres; b. Tensor fasciæ antibrachii; c. Deltoideus; d. Biceps; e. Anconæi; f. Adductor carpi radialis; g. Ulnaris; h. Adductor carpi ulnaris; i. Abductor digitorm; k. Abduc-





tor externus digiti maximi ; *l.* Vastus externus ; *m.* Biceps femoris ; *n.* Semiten-
dinus ; *o.* Rectus femoris ; *p.* Glutæus medius ; *q.* Gemelli ; *r.* Extensor
metatarsi externus ; *s.* Flexor digitorum ; *t.* Peroneus longus ; *u.* Tibialis anticus ;
v. Extensor digitorum ; *w.* Accessory Flexor of the Toes, the Tendon of which
passes over the Knee ; 1, the Œsophagus ; 2, the Trachea ; 3, Os Hyoides ; 4,
the Clavicle ; 5, the Furcula ; 6, the Scapula ; 7, the Humerus ; 8, Sternum ;
9, Ulna ; 10, Radius.

Fig. XVI. Shoulder of the same Bird, after the Pectoralis major has been
removed : a. the Pectoralis major ; b. Pectoralis medius ; c. its Tendon. The
remaining references as in the preceding fig.

Fig. XV. Muscles of the Arm in the Swift (*Hirundo apus*) : a. Pectoralis
major ; b. Tensor fascii antibrachii, and at the same time a powerful Flexor ; c.
Furcula ; d. Humerus ; e. Fore-arm.

PLATE XVI. BIRDS.

Fig. I. Os Hyoides of the Goose : a. the lingual bone ; b. the anterior, and
c. the posterior, process of the body of the bone ; d. the Cornua ; e. the appen-
dages to them.

Fig. II. Os Hyoides of a Falcon (*Falco lagopus*) : a. to e. as in the preceding
fig. ; a.* horny sheath of the Tongue.

Fig. III. Head of a Woodpecker (*Picus major*), with the Os Hyoides : a. the
dart-shaped Tongue, with its little hooks pointing backwards ; b. the body of the
Os Hyoides ; c. d. the long Cornua turning round the Cranium ; e. the occipital
foramen ; f. the Orbit.

Fig. IV. The membranous concha of the Ear of the long-eared Owl (*Strix
otus*) : a. the Eye ; b. its projection internally into the concha of the Ear ; c. the
transverse tendon of the concha ; d. the bones of the Cranium ; e. the lower jaw,
covered merely by skin, and projecting into the cavity of the concha ; f. the en-
trance to the Tympanum ; g. the membranous valve of the Ear.

Fig. V. (From HOME, *Lect. on Comp. Anat.*) The Stomach of the Little

Auk: a. the Œsophagus; b. the pouch-like glandular cardiac cavity; c. the Gizzard; d. the Pylorus; e. the Duodenum.

Fig. VI. (From the same.) The Stomach of the African Ostrich; a. b. c. as in the preceding fig.; d. the Duodenum; e. the Gall-duct.

Fig. VII. Stomach of the common Pigeon: a. the Œsophagus; b. the glandular Crop; c. the Gizzard; d. d. its digastric muscle; e. a thinner muscular portion of the parietes of the Stomach; f. the Duodenum.

Fig. VIII. A portion of the Intestine of a Hen, with a vestige of the yolk-duct (a.) attached to it.

Fig. IX. The Cloaca and Bursa Fabricii laid open in a young Gander: a. the inner surface of the Bursa; b. the orifice of the Rectum; c. the Penis; d. the outer margin of the orifice of the Cloaca.

Fig. X. Cloaca of a Hen: a. the orifice of the Rectum; b. the orifice of the Oviduct of the left side, surrounded by a sphincter muscle; c. the orifices of the Ureters; d. the cavity of the Cloaca; e. the orifice of the Bursa Fabricii (g.); f. a projecting fold above it.

Fig. XI. (From PARSONS, *Phil. Trans.*) The Trachea of a male Crane: a. the Clavicle; b. the Furcula; d. the ridge of the Sternum.

Fig. XII. The inferior Larynx of a Drake, seen from its posterior surface: a. the Trachea; b. the orifice of the right Bronchus; c. the septum of the cavity of this Larynx; d. the orifice of the left Bronchus; e. a bony ampulla.

Fig. XIII. The Heart of an incubated Chick, somewhat magnified: a. h. the Œsophagus; b. the Heart; c. the Pulmonary Artery, which, by means of a left branch (c.*) and a right branch (c.**), forms a ring around the Œsophagus, and terminates in the Aorta; d. the opening of the Vena Cava into the right Auricle; e. the arch of the descending Aorta; f. the left, and g. the right, branch of the Aorta, from which arise the Carotids and Axillary Arteries (g.*); i. the descending Aorta increased in size by the junction of the Pulmonary Arteries.

Fig. XIV. Heart of a Green Parrot. A. The right ventricle laid open: a. its cavity disposed concentrically about the left Ventricle; b. a part of the external surface of the Septum of the Ventricles; c. the tricuspid valve at the orifice of this Ventricle; d. the right Auricle laid open; e. the triple division of the Aorta; f.* the orifice of the Pulmonary Artery (f.) B. The left Ventricle laid open; a.* the continuation of the right Ventricle, disposed concentrically around the left; e. f. as in fig. A.; g. the semilunar valves at the root of the Aorta; h. the left Ventricle; i. the mitral valve; k. the left Auricle laid open.

Fig. XV. Sexual Organs of a young Cock ; a. a. the Testicles ; b. the Epididymis ; c. the seminal duct ; d. d. the Renal Capsules : e. the Aorta ; f. f. the Kidneys ; g. the Ureters ; h. the Bursa Fabricii ; i. the Rectum.

Fig. XVI. Sexual Organs of a Hen : a. the Ovary ; b. a tolerably mature Egg in its capsule. The white line (c.) indicates the spot where the capsule opens in order to permit the escape of the Egg ; d. an empty capsule, from which the Egg (i.) lodged in the Oviduct has escaped ; e. the orifice of the Oviduct ; f. its convolutions, opened at g. in order to show the folds of its inner surface ; h.* the Mesentery, by means of which the Oviduct is attached ; h.* the dilated portion of the Oviduct, containing the Egg, and secreting the shell ; k. its villous surface ; l. the lowest portion of the Oviduct laid open, with the longitudinal folds of its inner surface ; m. the Cloaca ; n. its parietes ; o. the Bursa Fabricii ; p. the dilatation of the Rectum ; q. the Intestine ; r. r. the lower portion of the Cœca.

Fig. XVII. The Areolapellucida of a Hen's Egg, after 44 hours' incubation (magnified) : a. the cephalic extremity of the Embryo ; b. the caudal extremity, with the Sinus rhomboidalis of the Spinal Marrow ; c. the open abdomen, at the bottom of which is the Spine ; d. the Areola pellucida ; e. the membrane of the Yolk.

Fig. XVIII. The Embryo in the Hen's Egg at the end of 72 hours' incubation : a. the Embryo ; b. the Amnion ; c. the Heart ; d. rudiment of the anterior, and e. of the posterior, extremities ; f. the open abdomen into which the inner layer of the membrane of the Yolk (g.) is inflected ; h. the Allantois (improperly called Chorion) projecting.

Fig. XIX. The representation of the parts in the Hen's Egg at the end of 13 days' incubation (somewhat reduced in size) : a. the Fœtus ; b. the Amnion laid open ; c. the rudiment of the left wing, and d. of the left leg ; e. the Heart ; f. the Liver ; g. the Stomach ; h. the loop of Intestine situated without the abdomen ; i. Ductus vitello-intestinalis ; k. the Umbilical Vein, and l. the Umbilical Artery ; m. the Allantois, improperly called Chorion ; n. the Yolk-Bag, on which the Omphalo meseraic vessels ramify, and form the so-called Figura venosa, which here occupies nearly the whole of the Egg ; n.* Vena terminalis ; * the situation where the Amnion is connected with the Yolk-bag ; o. Albumen.

PLATE XVII. MAMMALIA.

Fig. I. Skeleton of a young Goat : a. the Intermaxillary Bone ; b. the Nasal Bone ; c. the Lachrymal Bone ; d. the Frontal Bone ; e. the superior Maxillary Bone ; f. the lower Jaw-Bone ; g. Pisiform Bone ; h. Cannon Bone (Metacarpus) ; i. the first, k. the second, and l. the third, phalanges of the Fingers ; m. the Os Calcis ; n. the Metatarsus ; o. the first, p. the second, and l. the third, phalanges of the Toes.

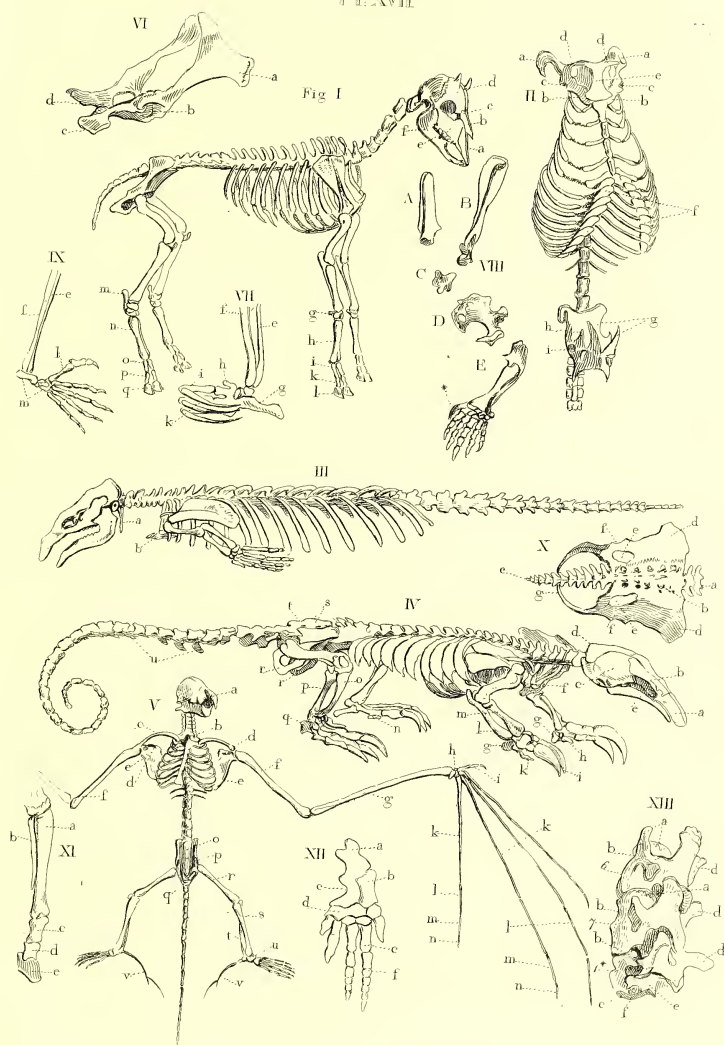
Fig II. (From HOME, *Phil. Trans.*) Trunk of the Skeleton of the *Ornithorhynchus paradoxus* : a. b. the bones of the Shoulder, of which a. corresponds to the Scapula, and b. to the Clavicle ; c. the articular surface ; d. d. the transverse processes of the Manubrium Sterni (e.), which are connected with the bones of the Shoulder, and by that means form a kind of second Clavicle (Furcula) ; f. bony lamina at the ends of the false Ribs ; g. moveable bones on the arch of the Pubes ; h. tubercles on the horizontal ramus of the Os Pubis.

Fig. III. (From CUVIER, *Annales du Muséum.*) Skeleton of the *Trichechus manatus* : a. the rami of the Os Hyoides ; b. the anterior point of the Sternum.

Fig. IV. Skeleton of the Two-toed Anteater (*Myrmecophaga didactyla*) : a. the Nasal Bone ; b. the Frontal Bone ; c. the Parietal Bone ; d. the Occipital Bone ; e. the inferior Maxilla ; f. the Clavicle ; g. the Pisiform Bone ; h. the rudiment of the inner, and k. of the outer, Finger ; i. the intermediate and perfect Fingers ; l. the Ulna ; m. the Radius ; n. the rudiment of the innermost of the four Toes ; o. the Tibia ; p. the Fibula ; q. the Os Calcis ; r. the imperfectly united Ossa Pubis ; s. the Ilium ; t. the ridge formed by the union of the spinous processes of the Sacrum ; u. the appendages or inferior spinous processes of the caudal vertebrae.

Fig. V. Skeleton of the common Bat (*Vespertilio murinus*) : a. the fissure in the upper jaw, and particularly between the Intermaxillary Bones ; b. the anterior extremity of the Sternum ; c. the Clavicle ; d. the Coracoid Process of the Scapula (e.) ; f. the Humerus ; g. the Radius ; h. the Carpus ; i. the Thumb ; k. the Metacarpus ; l. the first, m. the second, and n. the third, phalanx of the Fingers ; o. the Ilium ; p. the tuberosity of the ramus of the Os Pubis ; q. the

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Symphysis Pubis; r. the Femur; s. the Tibia; t. the rudiment of the Fibula; u. the Tarsus; v. the spur upon the Os Calcis.

Fig. VI. The Pelvis of a Cow, from which the Sacrum has been removed: a. the Ilium; b. the Acetabulum; c. the Ischium; d. the Symphysis Pubis.

Fig. VII. (From CUVIER, *Annales du Muséum.*) The right posterior extremity of the Aï (*Bradypus tridactylus*): e. the Fibula; f. the Tibia; g. the Os Calcis; h. three perfect and two imperfect Metatarsal Bones consolidated into one mass; i. the first phalanx of the Toes; k. the last phalanx.

Fig. VIII. (From DAUBENTON in BUFFON'S *Hist. Nat.*) Parts of the Skeleton of the Mole. A. the superior projecting portion of the Sternum; B. the Scapula; C. the Clavicle; D. the Humerus; E. the Fore-arm and Hand; * the sickle-shaped bone at the inner margin of the Carpus.

Fig. IX. (From FISCHER'S *Anatomy of the Maki.*) The right-hind leg of the Loris *ceylonicus*: e. the Fibula; f. the Tibia; m. the tarsal bones; l. the great Toe, detached in the manner of a Thumb.

Fig. X. (From CUVIER, *Annales du Muséum.*) The Pelvis of the Aï (*Bradypus tridactylus*): a. the lumbar Vertebrae; b. the Sacrum; c. the caudal Vertebrae; d. the Ilium; e. the Ischiatic foramina; f. the Acetabulum; g. the arch of the Pubes.

Fig. XI. (From CUVIER, *Leçons d'Anat. Comp.*) Fore-leg of a Horse: a. the great metacarpal (cannon) Bone; b. the rudiment of the external metacarpal Bone; c. first Phalanx of the Finger (Fetlock); d. the second (Coronet); e. the third (Coffin-Bone).

Fig. XII. (From the same.) Anterior extremity of the Porpoise: a. the Humerus; b. the Radius; c. the Ulna; d. the Carpus; e. the Metacarpus; f. the phalanges of the Fingers.

Fig. XIII. The first Dorsal (1*), with the seventh (7) and sixth (6) Cervical, Vertebrae of the Horse: a. the superior, convex articular surfaces of the bodies; c. the inferior, concave; b. the transverse processes; d. the spinous processes; e. f. the articular surfaces for the upper Rib.

PLATE XVIII. MAMMALIA.

Fig. I. Head of a Porpoise (*Delphinus delphis*): a. the nasal or blowing aperture; b. the temporal fossa; c. the Zygoma; d. the articular condyle of the Occipital Bone.

Fig. II. The roof of the Cranium of the same animal, viewed from within: d. the occipital condyles; e. the opening of the great longitudinal sinus lodged in the bony falx (f); g. the inner surface of the Cranium.

Fig. III. The lower part of the Cranium, viewed from above and behind: c. d. as in fig. I.; i. h. a lamina which occupies the situation of the cribriform plate at the front part of the Cranium; k. the very flat sella turcica; l. the base of the Skull.

Fig. IV. (From DAUBENTON in BUFFON'S *Hist. Nat.*) Head of a Walrus (*Trichechus rosmarus*): a. the Orbit, which is not separated from the temporal fossa; b. the nasal aperture; c. the Zygoma; d. the alveoli of the tusks (f); e. the occipital ridge.

Fig. V. (From the same.) The skull of an Elephant, viewed from below, without the lower jaw: a. a. the alveoli of the Tusks; b. the anterior, c. the posterior, molar teeth; d. rudiment of a new molar tooth; e. posterior aperture of the Nares; f. articular condyles of the Occipital Bone; g. the Zygoma.

Fig. VI. The ascending ramus of the lower jaw of a Roe: a. the Coronary Process, with the flat articular surface; c. the ramus of the Jaw-Bone.

Fig. VII. The Head of a Horse: a. the Orbit; b. the point of the Nasal Bones; c. the connection of the zygomatic processes of the Frontal and Malar Bones; d. the temporal fossa; e. the occipital and parietal cristæ; f. the occipital foramen; g. the tympanal bone.

Fig. VIII. (From BLUMENBACH, *Comp. Anat.*) Head of the Ornithorhynchus *paradoxus*: a. Intermaxillary Bone; b. Zygoma; c. Orbit; d. the cavity of the Cranium; e. the bony falx; f. the occipital foramen; g. the occipital condyles; h. the posterior part of the lower Jaw.

Fig. IX. The Head of the Beaver: a. the Intermaxillary Bone; b. the Nasal Bone; c. the Superior Maxillary Bone; d. the Frontal Bone; e. the Parietal

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Bone ; f. the Temporal Bone ; g. the tympanal Bone ; h. the mastoid process ; i. the occipital foramen ; k. the Occipital Bone ; l. the Zygoma ; m. the alveoli of the molar teeth.

Fig. X. (From FISCHER's *Anatomie der Maki*.) The Head of the *Tarsius fuscus* : a. a. the enormously large Orbits.

Fig. XI. The Cranium of a Monkey : a. the Intermaxillary Bones ; b. the Nasal Bone ; c. the Superior Maxilla : * the nasal aperture ; d. the Frontal Bone ; e. the Parietal Bone ; f. the Temporal Bone ; h. the Meatus auditorius ; i. the situation of the occipital foramen ; k. the Occipital Bone ; l. the Malar Bone ; n. the temporal fossa, distinct from the Orbit.

Fig. XII. A longitudinal vertical section of the Cranium of a Cat : a. the edges of the occipital foramen ; b. fossa for lodging the Cerebellum ; c. the Os Petrosus ; d. the bony Tentorium ; e. the middle, and f. the anterior, cranial fossa ; g. the Cribriform plate of the Ethmoid Bone ; i. i. the ethmoid cells ; k. Os turbinatum ; l. the frontal sinus ; m. the Intermaxilla ; m.* the foramen incisivum ; n. palatine portion of the Superior Maxillary Bone ; o. molar teeth ; p. posterior Palate Bone (Processus pterygoideus) ; r. the flat surface of the Sella Turcica ; s. the tympanal Bone.

Fig. XIII. A vertical longitudinal section of the Cranium of a young Sheep ; 1, a.—1, b.—1, c. the posterior cranial vertebra, (occipital Bone) ; 2, a.—2, b.—2, c. the middle cranial vertebra, (2, a. the posterior body of the Sphenoid, 2, b. the great ala of the Sphenoid, 2, c. the Temporal Bone) ; 3, a. 3, b. 3, c. the anterior cranial vertebra, (3, a. the anterior body of the Sphenoid, 3, b. the lesser ala of the Sphenoid ; 3, c. the Frontal Bone) ; d. the Optic foramen ; e. the Ephippium ; f. the Palate Bone ; g. the middle plate of the Ethmoid (analogous to the point of the Sphenoid in Birds, Tab. XIV. fig. II. g.*) ; h. the internal pterygoid process of the Sphenoid, or posterior Palate Bone ; i. the superior Maxillary Bone ; k. the Vomer ; l. a probe passed through the large foramen incisivum ; m. the Intermaxillary Bone ; n. the inferior Os turbinatum ; o. the Nasal Bone ; p. the tubular cells of the Ethmoid Bone ; q. the petrous part of the Temporal Bone.

Fig. XIV. A vertical section of the Frontal Bone of a full-grown Sheep, in order to display the large frontal sinuses, which are wanting in the young animal ; a. the inner surface of the Cranium ; b. the frontal sinuses ; c. the Ethmoid cells ; d. the cribriform plate.

Fig. XV. A. Part of a Cranium of a young Cat : a. the Inter-parietal Bone ;



b. b. the Parietal Bones; c. the occipital part of the Occipital Bone; d. d. the condyloid portions; e. the basillary portion; f. the occipital foramen; g. g. the Temporal Bones. B. From the Cranium of a Mouse: a. b. c. as before; h. the Frontal Bone.

Fig. XVI. The external stratum of muscles in a young Goat: 1, Sphincter palpebrarum; 2, Sphincter oris; 3, Buccinator; 4, Zygomatici; 5, Quadratus menti; 6, Temporalis; 7, Masseter; 8, 8, Muscles of the Ear; 9, Digastricus; 10, a muscle, which acts as Trapezius and Elevator of the Humerus; 11, Trachelo-mastoideus and Scaleni; 12, a muscle which is analogous to the Sterno-cleido-mastoideus, and divides at its upper extremity into two tendons, of which the outer runs upon the sheath of the Masseter, and the inner is connected with the tendon of the Trachelo-mastoideus; 13, Sterno-thyroideus; 14, Trachea; 15, Latissimus dorsi; 16, Longissimus dorsi; 17, Obliquus descendens; 18, Rectus abdominus; 19, Serratus magnus; 20, Pectoralis major, (20, a. the upper division of it, which is inserted into the head of the Humerus, 20, b. the lower division, which, crossing the other, runs to the lower end of the Humerus); 21, a. the Infra-spinatus; 21, b. the Supra-spinatus; 22, Anconæi; 23, Biceps, consisting of two muscles, of which 23 is the external, caput breve, and 23, a. the inner, caput longum); 24, Extensor metacarpi; 25, Extensor digiti externi; 26, Flexor carpi externus; 27, Adductor digitorum; 28, Extensor digiti interni, (the termination of this muscle is more distinct in Fig. 16.); 29, Flexor carpi internus; 30, Flexor digitorum, the tendons of which are much stronger than those of the Extensors; 31, Gluteus medius; 32, Tensor fasciæ; 33, Rectus femoris; 34, Coccygei; 35, Extensor cruris, (Vasti et Cruralis); 36, Semimembranosus et Semitendinosus; 36, a. Semimembranosus; 37, Biceps femoris; 38, Gastrocnemii; 39, Flexor digitorum; 40, Extensor digiti externi; 41, Tibialis anticus; 42, Extensor digiti interni and Adductor digitorum; 43, a Tendon which supplies the place of a Flexor digitorum sublimis, and is perforated by the actual Flexor; 44, Sartorius; 44,* Adductor magnus.

Fig. XVII. The Breast of the same animal, seen from before, in order to shew the crossing of the divisions of the Pectoral muscles: the references are the same as in the preceding Fig.; 45, Subscapularis.

Fig. XVIII. The scapular region of the same animal after the Pectoralis, Trapezius, and Latissimus dorsi have been removed: the references as in the preceding Figures: 46, Rhomboideus; 47, Rectus anticus; 48, Longus colli; 49, Ligamentum nuchæ; 50, Splenius.

Fig I

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Fig. XIX. (From CUVIER, *Anat. Comp.*) Muscles of the snout of the Mole : a. Temporal ; b. c. d. e. the four muscles of the snout ; f. Masseter.

PLATE XIX. MAMMALIA.

Fig. I. Brain and Spinal Marrow of a Rat, viewed from above : a. Hemispheres ; 1, Olfactory Ganglia ; b. Optic Tubercles, (anterior pair of the Corpora Quadrigemina) ; b.* posterior pair ; c. Cerebellum, consisting here of the indistinct vermiform process ; c.* lateral Hemispheres of the Cerebellum ; d. its lateral lobules, (Flocks) ; e. the cervical portion of the Spinal Marrow, forming one uniform swelling ; f. the inferior swelling with the Cauda equina. Fig. 1. A section of the Spinal Marrow in the cervical region : g. the superior groove ; h. grey substance ; i. the canal ; k. the inferior groove.

Fig. II. The Brain of a Hare, viewed from above. The right hemisphere is half removed, and the right lateral Ventricle laid open : the Cerebellum is vertically divided, and the right half turned aside, in order to show the surface of the section : 1, 1, the Olfactory Ganglia ; 1,* the opening of communication between the lateral Ventricle and the cavity of the Olfactory Ganglion ; a. the Hemisphere, with scarcely any trace of convolutions ; a.* the posterior lobe, corresponding to the middle lobe in Man ; b. the anterior of the Pair of Corpora Quadrigemina on the right side, (Optic Tubercle) ; c. the posterior of the Pair of the same side ; d. the Posterior edge of the Corpus callosum ; e. its posterior fold ; f. Corpus striatum ; g. Cornu Ammonis, a continuation of the fold of the Corpus callosum ; h. the posterior extremity of the right lateral Ventricle ; i. the root of the right Optic Nerve, lying on the right Optic Thalamus (k.) ; l. the vermiform process of the Cerebellum ; m. its hemispheres ; n. its lateral lobules, (Flocks) ; o. medullary laminae on the surface of the Cerebellum ; p. the Fourth Ventricle ; q. the Arbor Vitæ. Fig. 2. The Pineal Gland of the Hare : a. the Dura Mater ; b. the Pineal Gland ; c. the great cerebral Vein.

Fig. III. The Brain of the Cat, viewed from below : 1, 1, the Olfactory Ganglia ; 1,* the cavity of one of them laid open by a transverse incision ; 1,**

the medullary root of the Olfactory Nerve arising from the Fissura Sylvii; a the Hemispheres; b. their posterior (middle) lobes; c. the grey substance about the Infundibulum; d. Crus Cerebri; e. Pons Varolii; f. its posterior and inferior stratum; g. Corpus pyramidale on the Medulla Oblongata (h.); i. the Cerebellum; k. Corpora Mammillaria; 2, decussation of the Optic Nerves; 3, Motor Oculi; 5, Maxillary Nerve, (Fifth Pair); 8, Auditory Nerve.

Fig. IV. (From ALBERS in the *Münchener Denkschriften*.) The Sclerotica with the Optic Nerve of a Porpoise: a. the entrance of the Nerve; b. the foramina for the passage of the Ciliary vessels; c. the posterior thin part of the Sclerotica; d. the anterior thin portion; e. the middle thickest part; g. the Sclerotica, separated in this situation from the Nerve (h) by the interposition of a peculiar mass (f.).

Fig. V. A vertical section of the Eye of a Dog, viewed from within: a. the Optic Nerve: b. its entrance into the Eye; c. the Sclerotica; d. the Retina; e. the Choroid; f. the Corpus ciliare; g. its unattached edge (Ciliary Processes); h. the Iris, or rather Uvea; i. the Cornea.

Fig. VI. The Eye and half the Head of a Mole: a. the Eye; b. its funnel-shaped muscle; 2, the rudiment of an Optic Nerve; 5, the Nerve of the fifth Pair; 5,* its superior Maxillary Branch; 5,** the Nerves of the Snout; d. the Ciliary Nerves; c. a little branch belonging to them, which runs through a bony canal; e. the situation where the rudiment of the Optic is connected with the Ciliary Nerves; * the snout; f. the Cribriform Plate.

Fig. VII. (From HOME, in *Philos. Trans.*) The Ear of a Whale (*B. mysticetus*) laid open: a. the inner surface of the bone of the Tympanum; b. its parietes, formed by a fatty substance, an inch thick; c. a concavity covered by a thin ligamentous Periosteum, the radiating fibres of which connect the Membrana Tympani, as well as the fold (f.), with the bone; d. the depression on the inner side of the Membrana Tympani; e. its outer surface; f. a membrane stretched transversely from the bone of the Tympanum to the Malleus (g.); h. the Incus; i. the Stapes; k. the Cochlea; l. the Auditory Nerve; m. the Temporal Bone; n. a piece of Cartilage (Os Hyoides?)

Fig. VIII. Bones of a Cat's Ear: a. Malleus; b. Incus; c. Stapes.

Fig. IX. (From CARLISLE, *Philos. Trans.*) Specimens of the Stapes: a. of the Ornithorhynchus; b. of the Kangaroo; c. of the Walrus.

Fig. X. Anterior surface of the Iris of the Eye of the Ox: a. the inner part, not fibrous, resembling a pupillary membrane with a transverse fissure in it; b. the circular fibres.

Fig. XI. FROM KIESER IN HIMLY'S *Bibliothek*.) The inner surface of the central part of the Iris of the Horse's Eye : e. the Operculum of the Pupil ; f. a rudiment of a similar structure at the lower margin of the Pupil.

Fig. XII. The inner surface (Uvea) of the Iris of the Ox's Eye : c. the radiated fibres ; d. its central, and merely membranous, portion.

Fig. XIII. The four Stomachs of a Sheep : a. the Œsophagus ; b. the first Stomach (Paunch) ; c. the second (Honeycomb bag) ; d. the third (Manyplies) ; e. the fourth or true Stomach ; f. the Intestine.

Fig. XIV. A part of the digestive Organs of the Beaver : a. the Œsophagus ; b. a collection of mucous follicles covered by the longitudinal fibres of the Stomach ; c. a portion from which these fibres have been removed ; d. the cardiac extremity of the Stomach ; e. a contracted portion of the Stomach ; f. its second division ; g. the Pylorus ; h. a dilatation at the commencement of the Duodenum (i.) ; k. the Pancreas ; l. m. its two heads ; n. the Biliary Duct ; o. the Gall-Bladder ; p. the suspensory Ligament of the Liver ; q. r. the smallest, and s. t. u. v. w. x. the larger, lobes of the Liver ; y. the orifice of the Vena Portæ ; z. the Spleen.

Fig. XV. A portion of the inner surface of the Stomach of the Beaver : a. the orifice of the Œsophagus ; b. b. b. apertures of the mucous follicles.

Fig. XVI. (FROM DAUBENTON IN BUFFON'S *Hist. Nat.*) Anal Glands of the Hyæna : a. glandular sac, viewed from without ; b. the Rectum ; c. its orifice ; d. openings of the Glands ; e. g. Glands ; f. their excretory ducts.

Fig. XVII. (From the same) Cæcum of the Hamster : a. small Intestine ; b. c. Cæcum ; d. e. f. g. Colon.

Fig. XVIII. (From the same) Stomach of the Hamster : a. Duodenum ; b. Pylorus ; c. the second, d. e. the first, part of the Stomach ; f. the insertion of the Œsophagus.

Fig. XIX. Tongue and Fauces of the Horse-shoe Bat (the cavity of the mouth is exposed by detaching its floor from the edges of the lower Jaw-Bone) : a. the Palate ; b. the posterior orifice of the Nasal Canal surrounded by a membranous margin ; c. the corresponding aperture (Glottis) of the Trachea, adapted to the former ; d. the posterior swelling of the Tongue (e.)

Fig. XX. (FROM DAUBENTON.) Extremity of the Intestine, with the female sexual organs of the Two-toed Ant-Eater : i. the Colon ; k. the Rectum ; m. n. cæcal appendages to it ; l. the common aperture of the genital and sexual organs ; o. the orifice of the Urethra ; p. the Bladder ; q. the Uterus ; r. s. its broad ligaments ; t. u. the Ovaries.

Fig. XXI. (From the same.) Cæcum of the Lion : a. the small Intestine ; b. the Cæcum ; c. the Colon.

Fig. XXII. (From the same.) A Kidney of the Seal.

PLATE XX. MAMMALIA.

Fig. I. Hyoid Bones. A. of the Hare, viewed from below : a. the lingual process. B. of the Horse, viewed from the side : a. the lingual process ; b. the body ; c. the posterior cornua ; d. the anterior cornua ; e. the styloid bones.

Fig. II. Larynx and Os Hyoides of the Pole-Cat (*Mustela putorius*) : a. the Thyroid Cartilage ; b. the Cricoid Cartilage ; c. the Trachea ; d. the body of the Os Hyoides ; d.* its anterior, d.** its posterior, cornua ; e. the styloid bones ; f. the Epiglottis.

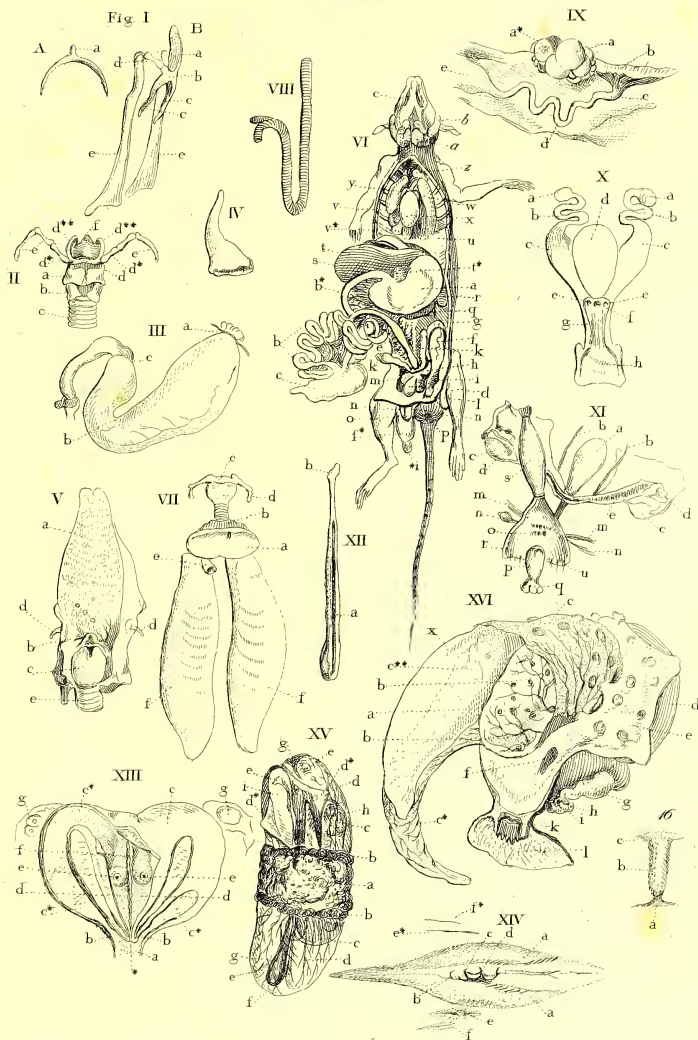
Fig. III. (From DAUBENTON in BUFFON's *Hist. Nat.*) The Stomach of the Seal : a. the Cardia ; b. the separation between the two portions of the Stomach ; c. the Pylorus.

Fig. IV. (From the same.) A papilla of the Tongue of the Lynx (magnified).

Fig. V. (From the same.) Tongue and Larynx of the Seal : a. the Tongue divided anteriorly ; b. the Epiglottis ; c. the Larynx ; d. the styloid bones ; e. the Trachea.

Fig. VI. A Rat (*Mus rattus*) laid open : a. the Stomach ; b. the Intestinal Canal ; b.* the Duodenum ; c. the Cæcum ; d. the Bladder ; e. the Rectum ; f. a Testicle lodged within the Abdomen ; f.* the other lying external to it ; g. the Epididymis ; h. the seminal duct ; i. a little tubercle formed by the convolution of the seminal duct, and representing a part of the Epididymis ; i.* the same part, external to the Abdomen ; k. the Vesiculæ Seminales ; l. the Gubernaculum of HUNTER, or inverted Cremaster ; m. the Prostate ; n. the excretory ducts of the great glands of the Prepuce ; o. the Penis ; p. the Anus ; q. the Spleen ; r. the Kidney ; s. the Biliary Duct ; t. the Liver ; t.* a small lobe of it ; u. the Diaphragm ; v. the right Lung, with four lobes ; v.* the lobe situated between the

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Heart and Diaphragm; x. the Heart; w. y. the Auricles; z. the Thymus; a. the Submaxillary Glands; b. the Parotid Glands; c. the Lower Jaw.

Fig. VII. (From DAUBENTON.) Lungs and Heart of the fœtus of the Manati: a. the Heart divided at the apex; b. the Thymus; c. the Os Hyoides; d. the Styloid bones; e. the Aorta; f. f. the Lungs.

Fig. VIII. (From WOLFF, *De organo Vocis*.) The Trachea of the Ai (*Bradypus tridactylus*).

Fig. IX. Ovary and Fallopian Tube of the Sow: a. the Ovary composed of several globular bodies; a.* a section of a small one, not to be considered as a mature Ovum; b. the orifice of Fallopian Tube (c. d.); e. the commencement of the horn of the Uterus.

Fig. X. (From HOME, *Philos. Trans.*) Female sexual organs of the Ornithorhynchus: a. the Ovary; b. the Fallopian tube; c. the receptacle for the Ovum; e. the orifices of the Uteri; d. the Bladder; f. the orifice of the Urethra; g. the Vagina; h. the Cloaca.

Fig. XI. (From CUVIER, *Comp. Anat.*) Male sexual organs of the Echidna: a. the Bladder; b. the Ureters; c. the Testicles; d. the Epididymes; e. the seminal duct; m. muscles of the Coccyx; n. COWPER'S Glands; o. orifice of the Urethra; p. Penis, drawn out of the Cloaca; q. four papillæ at its extremity; r. the Cloaca; s. the Rectum; u. sebaceous Glands.

Fig. XII. Bone of the Penis of a Dog: a. the groove for the Urethra; b. the cartilaginous extremity.

Fig. XIII. (From HOME, *Philos. Trans.*) The receptacle for the Ovum in the Kangaroo in its impregnated state, though emptied of its contents: a. the Vagina; b. the openings of the lateral canals into it; c. one of the lateral canals; c.* the other laid open; d. the two halves of the receptacle for the Ovum; e. the orifices of the Fallopian Tubes; f. the imperfect septum of the cavity of the receptacle; * its communication with the Vagina; g. the Ovaries.

Fig. XIV. (From HUNTER, *Philos. Trans*.) External female sexual organs of the Whale (*B. rostrata*): a. the great Labia pudendi; b. the Clitoris; c. the orifice of the Urethra; d. the orifice of the Vagina; e. a fold within which the Nipple is situated; e.* the same fold closed; f. a second fold of the skin in this situation; f.* the same closed.

Fig. XV. The Ovum of a Bitch at the last period of Utero-gestation. A portion of the Chorion has been reflected at the upper extremity, in order to show

the Allantois and Vesicula umbilicalis : a. the annular Placenta ; b. its thick, dark-green edges ; c. the translucent Amnion with the fœtus ; d. the Chorion distended by the Allantois ; d.* the same reflected ; e. folds of the Chorion, formed by the duplicature of it which surrounds the Vesicula umbilicalis ; f. cords by which each extremity of the Vesicula umbilicalis is attached ; g. the Vesicula umbilicalis covered by Chorion ; h. the same laid bare ; i. the Allantois laid bare.

Fig. XVI. The pregnant Uterus of a Cow at the commencement of the second half of pregnancy—one horn is opened : a. the Amnion, furnished with vessels, and with little yellowish papillæ ; b. the fœtus visible within it ; c. the Chorion beset with Cotyledons ; c.* Chorion covering the horn of the Allantois (x.) ; c.** Chorion shining through the Allantois ; d. the posterior part of the great horn, containing the fœtus, and not laid open ; e. the inner surface of the Uterus beset with tuft-like Cotyledons ; f. the entrance to the smaller unimpregnated horn (g.), in which was lodged one extremity (c.*) of the Ovum ; h. the Fallopian Tube ; i. the corresponding Ovary ; k. the Os Uteri ; l. the Vagina.

Fig. 16. The Umbilical Cord of the Fœtus contained in the Uterus represented in fig. XVI. : a. its insertion into the fœtus ; b. the middle portion, covered by a continuation of the rough Amnion ; c. its attachment to the Ovum.

FINIS.



